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**FLORA OF MAHARASHTRA STATE  
MONOCOTYLEDONES**



4871

**Flora of India  
Series 2**

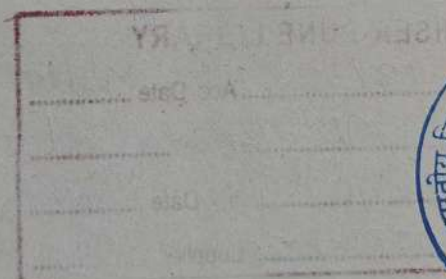
# **FLORA OF MAHARASHTRA STATE**

Editors

B. D. Sharma, S. Karthikeyan  
and  
N. P. Singh

## **MONOCOTYLEDONES**

P. Lakshminarasimhan



**BOTANICAL SURVEY OF INDIA**

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## FOREWORD

The Botanical Survey of India since its re-organisation in 1954 has been engaged in floristic survey of unexplored and under-explored parts of the country. From early 1980s, the department has started the publication of **Flora of India** under four series; Series 1 on the National Flora comprising taxonomic revisions of families, tribes and genera—primarily—of flowering plants for the whole country; Series 2 on the floristic inventories of different States/Union territories; Series 3 pertaining to the floras of important districts and Series 4 to include special publications.

Cooke's **Flora of the Presidency of Bombay** (1901–1908) continues till today to be the most important floristic work for identification of the species that would be collected in the localities of the erstwhile Bombay Presidency viz., parts of Gujarat, Maharashtra, Goa, North Kanara and Sind which is now in Pakistan. However, this work has become obsolete due to changes in the regional boundaries and changing patterns of flora. Since its publication nearly 1000 species have been added to Cooke's **Flora** which include many new species. Therefore, revising and rewriting this flora on modern lines has become an absolute necessity. The flora of Maharashtra is very varied and interesting. Vegetation of N.W. Ghats – **Sahyadris** – has captured the imagination of many scientists and environmentalists. At the same time the vegetation of Deccan, Marathwada and Vidarbha regions also have their own interesting floristic features.

It is proposed to bring out the rich floristic account of this state in 3–4 volumes. The need to publish this **Flora** cannot be over-emphasised. Cooke (*op. cit.*) described for monocots alone, 23 families, 164 genera, 431 species, 1 subspecies and 10 varieties of wild species. In the present **Flora** 34 families, 256 genera, 904 species, 2 subspecies, 39 varieties, 1 subvariety and 1 forma of wild plants are being described (the increase in the number of families is due to the changed concepts and addition of the family – Hydatellaceae). Some other salient features brought out by this work are, that, for monocots alone, 10 new genera, 84 species, 11 subspecies and 1 variety have been described from Maharashtra; 330 species, 1 subspecies and 13 varieties have been recorded as new since publication of Cooke's *Flora*. Further,

2 genera and 303 species have undergone name changes. A total of 120 species and 23 varieties are being cultivated in the state. Nearly 77 species and 2 varieties of monocots are endemic to Maharashtra. Line drawings of 144 plants and 8 colour photographs have also been given. An exhaustive bibliography has been provided to help in further study of plants of this region.

The portion containing Dicotyledones of Maharashtra is in press and will be published shortly.

It is hoped that this **Flora** will be useful to the students, nature lovers, environmentalists, foresters and others interested in identification, conservation and utilisation of plant resources of Maharashtra State.

Botanical Survey of India,  
P-8, Brabourne Road,  
Calcutta - 700 001.

**P. K. HAJRA**  
Director

January, 1996.

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★ ★ ★

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## HYDROCHARITACEAE

1. Salt water plants ... *HALOPHILA*
1. Fresh water plants :
  2. Stems branched, leafy throughout:
    3. Leaves in whorls; perianth double; stamens 3; style undivided ... *HYDRILLA*
    3. Leaves alternate; perianth single; stamens 2; style notched ... *LAGAROSIPHON*
  2. Stemless or stoloniferous; leaves radical :
    4. Petioles distinct; spathes winged ... *OTTELIA*
    4. Petioles indistinct; spathes not winged :
      5. Perianth single; peduncle of female spathes spirally coiled ... *VALLISNERIA*
      5. Perianth double; peduncle not as above ... *BLYXA*

### *BLYXA* Noron. ex Petit-Thou.

1. Flowers unisexual; stamens 9 ... *B. octandra*
1. Flowers bisexual; stamens 3 :
  2. Seeds with 8 rows of blunt spines, with a 0.1–0.5 cm long filiform tail at both ends ... *B. echinosperma*
  2. Seeds with 8 rows of more or less tubercled ribs, without filiform processes ... *B. aubertii*

*Blyxa aubertii* Rich. in Mem. Inst. Paris 12, 2: 19, 23, 77, t. 4. 1812; Hartog in Steenis, Fl. Males. 1, 5: 390, t. 5. 1957; Subr. Aquat. Ang. 59. 1962; Hemadri in Indian Forester 94: 810. 1968. *B. oryzetorum* (Decne.) Hook. f. Fl. Brit. India 5: 661. 1888. *B. griffithii* Planch. ex Hook. f. *op.cit.* p.p. *B. ceylanica* Hook. f. *op.cit.*

Herbs, monoecious. Leaves 15–20 x 0.5–1.0 cm, linear, 5–7-nerved, sheathed at base. Flowers in 1-flowered, tubular spathes; spathes 4–6 cm long, tip obtuse. Fruits cylindrical, c 6 cm long. Seeds many, 0.15–0.20 cm long, ellipsoid to ovoid.

*Fls. & Frts.* : August–February.

*Illus.* : Hartog in Steenis, *op.cit.*; Subr. *op.cit.* 152, f. 40.

*Distrib.* : Submerged hydrophytes in stagnant water pools. Chandrapur; Pune; Ratnagiri; Satara; Sindhudurg.

*B. echinosperma* (C. B. Cl.) Hook. f. Fl. Brit. India 5: 661. 1888; Cooke, Fl. Pres. Bombay 3: 172. 1958 (Repr. ed.); Hartog in Steenis, Fl.

Males. 1, 5: 391, f. 6a. 1957; Subr. Aquat. Ang. 59. 1962. *Hydrotopus echinospermus* C. B. Cl. in J. Linn. Soc. Bot. 14: 8, t. 1. 1875. *Blyxa echinospermoides* Blatt. in J. Proc. Asiat. Soc. Beng. (N. S.) 26: 354. 1931. *B. lancifolia* Hook. f. *op.cit.* *B. talbotii* Hook. f. *op.cit.*

Herbs, annual. Leaves 10–20 cm long, sheathing at base. Flowers white, in 1-flowered spathes. Fruits 3.5–7.0 cm long, linear, ribbed. Seeds oblong.

Fls. & Frts. : July–December.

Illus. : Hartog in Steenis, *op.cit.*; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 684. 1982.

Distrib. : Submerged hydrophytes in stagnant water pools. Bombay; Raigad; Satara; Sindhudurg.

**B. octandra** (Roxb.) Planch. ex Thw. Enum. Pl. Zeyl. 332. 1864; Hartog in Steenis, Fl. Males. 1, 5: 392, f. 6b. 1957; Subr. Aquat. Ang. 60. 1962. *Vallisneria octandra* Roxb. Pl. Cor. 2: 34, t. 165. 1802. *Blyxa roxburghii* Rich. in Mem. Inst. Paris 12, 2: 77, t. 5. 1812; Hook. f. Fl. Brit. India 5: 660. 1888; Cooke, Fl. Pres. Bombay 3: 172. 1958 (Repr. ed.). *B. griffithii* Planch. ex. Hook. f. *op.cit.* p.p.

Herbs, gregarious. Leaves 20–35 cm long, linear, sheathing, narrowed at base. Flowers white; male spathes enclosing 5–10 flowers; female spathes 1-flowered. Capsules linear, finely ribbed. Seeds oblong-ellipsoid, white.

Fls. & Frts. : June–February.

Illus. : Hartog in Steenis, *op. cit.*; Subr. *op cit.* 153, f. 41; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 684 & 977a. 1982.

Distrib. : Submerged hydrophytes in stagnant water pools. Bhandara; Chandrapur; Kolhapur; Pune; Satara; Sindhudurg.

#### HALOPHILA Petit–Thou.

- |  |     |                     |
|--|-----|---------------------|
| 1. Lateral shoots scarcely or not developed, glabrous; leaf margins entire; plants dioecious | ... | <i>H. ovalis</i>    |
| 1. Lateral shoots 0.5–1.0 cm long, hairy; leaf margins serrulate; plants monoecious          | ... | <i>H. decipiens</i> |

**Halophila decipiens** Ostenf. in Bot. Tidsskr. 24:260.1902; Dixit in J. Bombay nat. Hist. Soc. 36: 284. 1932; Hartog in Steenis, Fl. Males. 1, 5: 410, f. 18. 1957.

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Herbs; stems thin. Leaves 1.0–2.3 x 0.3–0.6 cm, oblong-elliptic, apex obtuse or rounded, base cuneate, faintly covered with short unicellular hairs on one or both sides. Spathes ovate, tearing at top as fruit is ripening, containing 1 male and 1 female flower, spathe segments enclosing female flower embracing the other. Fruits c 0.25 x 0.15 cm, broadly ellipsoid, beak 0.15–0.2 cm long. Seeds c 30, ovate.

*Fls. & Frts.* : January.

*Illus.* : Hartog in Steenis, *op. cit.*

*Distrib.* : Rare along coasts of Bombay.

**H. ovalis** (R. Br.) Hook. f. *Fl. Tasm.* 2: 45. 1858; Dixit in *J. Bombay nat. Hist. Soc.* 36: 284. 1932; Hartog in Steenis, *Fl. Males.* 1, 5: 408, f. 16. 1957; Subr. *Aquat. Ang.* 62. 1962. *Caulina ovalis* R. Br. *Prodr.* 1: 339. 1810. *Halophila ovata sensu* Hook. f. *Fl. Brit. India* 5: 663. 1888 *non* Gaud. 1829.

Herbs, slender, creeping. Leaves opposite, up to 7.5 x 1.0 cm, linear-oblong to ovate, palminerved; stipular scales 2, convolute. Spathes sessile, solitary, bracteate. Male flowers pedicelled; female usually sessile. Fruits ovate or subglobose, included, beaked. Seeds ovoid, finely reticulate.

*Fls. & Frts.* : January.

*Illus.* : Hartog in Steenis, *op. cit.*; Subr. *op. cit.* 156, f. 44; Matthew, *Illus. Fl. Tamilnadu Carnatic* 2: t. 685. 1982.

*Distrib.* : Rare. Bombay.

#### HYDRILLA L.C. Rich.

**Hydrilla verticillata** (L. f.) Royle, *Ill. Bot. Himal.* t. 376. 1839; Hook. f. *Fl. Brit. India* 5: 659. 1888; Cooke, *Fl. Pres. Bombay* 3: 170. 1958 (Repr. ed.); Hartog in Steenis, *Fl. Males.* 1, 5: 385, f. 1. 1957; Subr. *Aquat. Ang.* 55. 1962. *Serpicula verticillata* L. f. *Suppl.* 416. 1781. *Hydrilla polysperma* Blatt. in *J. Proc. Asiat. Soc. Beng. (N.S)* 26: 356. 1931. 'Sheval'.

Herbs, slender, submerged, free floating or rooting, c 45 cm long; roots fibrous. Leaves 3–8, 0.6–1.5 cm long, linear or linear-oblong, apex apiculate, margins entire or serrulate. Flowers unisexual, white; male flowers minute, shortly pedicelled, solitary, in subsessile, subglobose, muricate spathes; female flowers sessile, solitary in cylindrical, membranous spathes. Fruits smooth, muricate. Seeds oblong.

*Fls. & Frts.* : August–February.

*Illus.* : Hartog in Steenis, *op.cit.*; Subr. *op. cit.* 149, f. 37; Mahesh. *Illus. Fl. Delhi* f. 200. 1966; Matthew, *Illus. Fl. Tamilnadu Carnatic 2: t.* 686. 1982.

*Distrib.* : In ponds and tanks. Ahmednagar; Amaravati; Bombay (Cooke *op.cit.*); Kolhapur; Nagpur; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane; Yavatmal.

LAGAROSIPHON W. H. Harvey

*Lagarosiphon alternifolia* (Roxb.) Druce in Rep. Bot. Exch. Cl. Brit. Is. 1916: 630. 1917; Govind. in Proc. Indian Acad. Sci. (Pl. Sci.) 93: 15. 1984. *Vallisneria alternifolia* Roxb. Pl. Cor. 2: t. 165. 1802 & Fl. Ind. 3: 750. 1832. *Nechamandra alternifolia* (Roxb.) Thw. Enum. Pl. Zeyl. 332. 1864; Subr. & Balakr. in Bull. Bot. Surv. India 3: 23. 1961; Subr. Aquat. Ang. 56. 1962. *Lagarosiphon roxburghii* (Planch.) Bth. in Bth. & Hook. f. Gen. Pl. 3: 451. 1883; Hook. f. Fl. Brit. India 5: 659. 1888; Cooke, Fl. Pres. Bombay 3: 170. 1958 (Repr. ed.).

Herbs, c 15 cm high, perennial, submerged, lower portion tightly adhering to substratum with fibrous roots, upper portion floating. Leaves linear-lanceolate, acute, often twisted. Male spathes ovate, axillary, sessile, paired, 2-valved; female flowers solitary, axillary, sessile. Fruits ovoid, oblong or linear. Seeds numerous.

*Fls. & Frts.* : August–February.

*Illus.* : Subr. *op.cit.* 150, f. 38; Matthew, *Illus. Fl. Tamilnadu Carnatic 2: t.* 687. 1982 (*Nechamandra alternifolia*).

*Distrib.* : In ponds and tanks. Nagpur; Pune; Raigad; Thane; Yavatmal.

OTTELIA Pers.

*Ottelia alismoides* (L.) Pers. Syn. Pl. 1: 400. 1805; Hook. f. Fl. Brit. India 5: 662. 1888; Cooke, Fl. Pres. Bombay 3: 173. 1958 (Repr. ed.); Hartog in Steenis, Fl. Males. 1,5: 398, f. 10. 1957; Subr. Aquat. Ang. 61. 1962. *Stratiotes alismoides* L. Sp. Pl. 535. 1753.

Herbs, annual, submerged, flaccid. Leaves of two kinds; submerged leaves shortly petioled, narrow or oblong, tapering to base; floating ones oblong or orbicular, cordate or rounded at base, then narrowed into angled petiole, up to 18 cm in diam., 7–11-nerved,

margins undulate. Flowers white with yellow blotched base. Fruits 2.0–3.5 cm long, ellipsoid. Seeds oblong–fusiform.

*Fls. & Frts.* : September–April.

*Illus.* : Hartog in Steenis, *op.cit.*; Subr. *op.cit.* 155, f. 43; Matthew, *Illus. Fl. Tamilnadu Carnatic 2*: t. 688. 1982.

*Distrib.* : In ponds and tanks. Ahmednagar; Akola; Bhandara; Bombay; Chandrapur; Kolhapur; Nagpur; Pune; Raigad; Sindhudurg; Thane; Yavatmal.

#### VALLISNERIA L.

*Vallisneria spiralis* L. Sp. Pl. 1015. 1753; Hook. f. *Fl. Brit. India* 5: 660. 1888; Cooke, *Fl. Pres. Bombay 3*: 171. 1958 (Repr. ed.); Subr. *Aquat. Ang.* 57. 1962. 'Saivala'.

Herbs, tufted, submerged. Leaves linear, ribbon-shaped, sheathing at base, apex obtuse, margins faintly dentate or entire. Flowers dioecious, on long or short scapes; male spathes shortly peduncled, ovate; female spathes connate, tubular. Fruits 5–10 cm long, linear, included in spathes. Seeds numerous, oblong to fusiform, embedded in a gelatinous mass.

*Fls. & Frts.* : October–April.

*Illus.* : Subr. *op.cit.* 151, f. 39; Matthew, *Illus. Fl. Tamilnadu Carnatic 2*: t. 689. 1982.

*Distrib.* : In ponds and tanks. Ahmednagar; Akola; Amaravati; Bhandara; Kolhapur; Nagpur; Pune; Raigad; Satara; Thane; Yavatmal.

#### BURMANNIACEAE

##### BURMANNIA L.

- |  |     |                       |
|--|-----|-----------------------|
| 1. Saprophytic herbs; radical rosette–leaves absent                                | ... | <i>B. candelabrum</i> |
| 1. Autotrophic herbs; radical rosette–leaves present :                             |     |                       |
| 2. Flowers 0.8–1.5 cm long; wings elliptical; perianth–lobe margins double         | ... | <i>B. coelestis</i>   |
| 2. Flowers 0.45–0.7 cm long; wings orbicular–obovate; perianth–lobe margins single | ... | <i>B. pusilla</i>     |

*Burmannia candelabrum* Gagnep. in *Bull. Soc. Bot. Fr.* 54: 462. 1907; A.S. Rao & Verma in *Bull. Bot. Surv. India* 12: 143. (1970) 1972;

Hajra in Nayar, *et al.* Fasc. Fl. India 19: 7. 1988. *B. candida* Griff. ex Hook. f. Fl. Brit. India 5: 665. 1888, *p.p.*

Stems 6–20 cm high, filiform, simple or branched. Scales c 0.2 cm long, appressed, lanceolate, acute. Flowers 0.8–1.0 cm long, solitary or few on curved branches, usually blue, prominently 3-winged. Capsules obovoid or clavate.

*Fls. & Frts.* : August–November.

*Distrib.* : Rare. Konkan (Hajra in Nayar, *et al. op.cit.*).

*B. coelestis* D. Don, Prodr. Fl. Nepal. 44. 1825; Hook. f. Fl. Brit. India 5: 665. 1888; Jonker in Steenis, Fl. Males. 1,4: 17. 1948; A.S. Rao & Verma in Bull. Bot. Surv. India 12: 142. (1970) 1972; Hajra in Nayar, *et al.* Fasc. Fl. India 19: 9. 1988.

Stems 8–30 cm high, simple or branched. Rosulate—leaves 0.3–2.0 x 0.15–0.2 cm, linear-lanceolate, acute or acuminate, 3-nerved; cauline leaves up to 1 cm long, linear-lanceolate, subulate. Flowers blue or purplish with yellow lobes, solitary or few in fascicles. Capsules obovoid, truncate, transversely dehiscent.

*Fls. & Frts.* : June–November.

*Illus.* : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 690. 1982.

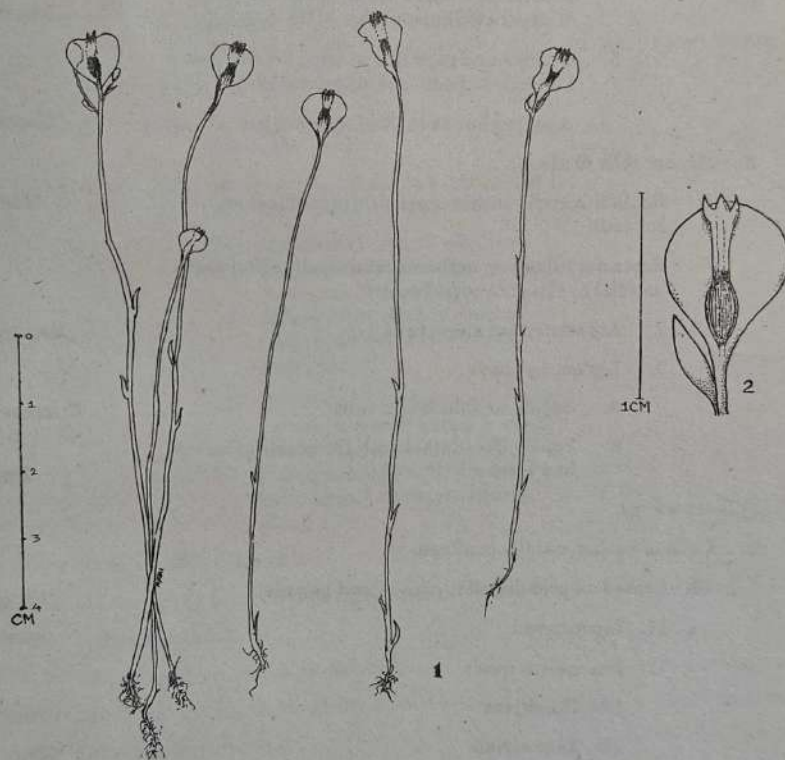
*Distrib.* : Rare. Maharashtra (Hajra in Nayar, *et al. op.cit.*).

*B. pusilla* (Wall. ex Miers) Thw. Enum. Pl. Zeyl. 325. 1864; Hook. f. Fl. Brit. India 5: 665. 1888; A.S. Rao & Verma in Bull. Bot. Surv. India 12: 142. (1970) 1972; Hajra in Nayar, *et al.* Fasc. Fl. India 19: 13. 1988. *Tripteranthus pusilla* Wall. ex Miers in Trans. Linn. Soc. 18: 537. 1841. *Burmannia coelestis* var. *pusilla* (Wall. ex Miers) Trim. Handb. Fl. Ceylon 4: 131. 1898; Cooke, Fl. Pres. Bombay 3: 174. 1958 (Repr. ed.).

Stems 5–20 cm high, slender, simple or branched, green. Rosulate—leaves 0.3–0.5 x 0.15 cm. Scales 0.1–0.2 cm long, lanceolate or elliptic, acute-acuminate. Flowers violet or bluish, solitary. Capsules obovoid, indehiscent.

*Fls. & Frts.* : August–September.

*Distrib.* : In marshy places along streams on higher ghats. Ahmednagar; Kolhapur; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.



*Burmannia coelestis* D. Don  
1. Habit 2. Capsules

## BOTANICAL SURVEY OF INDIA

## ORCHIDACEAE

1. Pollinia granular, powdery or in small masses :
  2. Anther cells adnate to column : ... SATYRIUM
  3. Lip 2-spurred
  3. Lip 1-spurred :
    4. Flowers c 7.5 cm across; stigmatic surfaces flat, almost confluent ... PECTELIS
    4. Flowers less than 3 cm across; stigmatic surfaces not as above, separate :
      5. Ovaries and capsules erect and parallel to peduncle; stigmatic surfaces in form of small swelling on edge of lip ... PERISTYLUS
      5. Ovaries and capsules widely spreading at an angle to peduncle; stigmatic lobes standing out as stalked appendages ... HABENARIA
2. Anther cells distinct :
  6. Roots tuberous; anther opercular, incumbent or suberect ... NERVILEA
  6. Roots not tuberous; anther erect or inclined forward, parallel to elongate rostellum :
    7. Lip ventricose above base ... SPIRANTHES
    7. Lip not as above :
      8. Sepals combined in a tube ... CHEIROSTYLIS
      8. Sepals free, dorsal with the petals cohering in a hood ... ZEUXINE
1. Pollinia waxy :
  9. Cells of anther usually confluent :
    10. Leaves on pseudobulbs, plaited and nerved :
      11. Lip spurred ... EULOPHIA
      11. Lip not spurred :
        12. Epiphytes ... CYMBIDIUM
        12. Terrestrials ... GEODORUM
    10. Leaves not as above :
      13. Lip not spurred :
        14. Sepals spreading widely, broader than petals; stipes of pollinia long, narrow ... COTTONIA
        14. Sepals and petals not spreading widely; stipes of pollinia ovate, flat ... LUISIA

## 13. Lip spurred :

## 15. Spur distant from base of lip :

16. Leaves with a sharply-pointed praemorse apex ... RHYNCHOSTYLIS

16. Leaf-apex bilobed, lobes unequal or subequal, rounded or subacute ... AERIDES

## 15. Spur at base of lip :

17. Spurs 2 ... DIPLOCENTRUM

## 17. Spur 1 :

## 18. Leaf - apex acute or sharply pointed :

19. Interior of spurs with callus and a vertical septum ... CLEISOSTOMA

19. Interior of spurs without callus and vertical septum ... GASTROCHILUS

## 18. Leaf-apex irregularly toothed or bilobed :

20. Leaf-apex irregularly toothed with 2-3 sharp teeth ... VANDA

20. Leaf-apex bilobed, lobes unequal or subequal, rounded or subacute :

21. Midlobe of lip semi-circular forming a brim on large ventricose, saccate spur; pollinia shorter than narrow linearcaudicle, with a small linear gland ... LOXOMA

21. Midlobe of lip not as above; spur narrow, linear or rarely a small conical sac; pollinia equalling oblong caudicle with a small, more or less oblong or square gland ... ACAMPE

## 9. Cells of anther parallel, distinct :

## 22. Pollinia connected by viscous or a granular appendage :

## 23. Inflorescence lateral :

24. Scape from side of pseudobulb ... PHAIUS

24. Raceme terminating leafy stem ... THUNIA

## 23. Inflorescence terminal :

25. Pseudobulbs with two or more leaves ... COELOGYNE

25. Pseudobulbs with single leaf ... PHOLIDOTA

## 22. Pollinia free, rarely with an obscure appendage :

## 26. Terrestrials :

27. Column winged in upper part ... LIPARIS

27. , Column wingless ... MALAXIS

# BOTANICAL SURVEY OF INDIA

10

## 26. Epiphytes :

- |   |     |              |
|---|-----|--------------|
| 28. Plants without pseudobulbs; leaves thick, equitant, distichous  | ... | OBERONIA     |
| 28. Plants with distinct pseudobulbs; leaves not as above :   |     |              |
| 29. Pseudobulbs flattened, discoid, rounded :   |     |              |
| 30. Sepals united to form a tube at least at base   | ... | PORPAX       |
| 30. Sepals completely free  | ... | ERIA         |
| 29. Pseudobulbs elongated, ovoid or conical :   |     |              |
| 31. Inflorescence distinct from pseudobulbs :   |     |              |
| 32. Lateral sepals alongside or under lip; flowers in racemes or spikes; pollinia free                      | ... | BULBOPHYLLUM |
| 32. Lateral sepals spreading; flowers solitary; pollinia subcoherent in pairs in each cell                  | ... | TRIAS        |
| 31. Inflorescence lateral on a leafy or leafless stem, or terminal, or from top of 1-2-leaved pseudobulbs : |     |              |
| 33. Leaves usually solitary; flowers solitary or in pairs   | ... | FLICKINGERIA |
| 33. Leaves more than one; flowers in fascicles or racemes   | ... | DENDROBIUM   |

## ACAMPE Lindl.

- |   |     |                     |
|---|-----|---------------------|
| 1. Lip spurred; panicles leaf-opposed; mid-lobe of lip with a fleshy tooth on each side of base | ... | <i>A. ochracea</i>  |
| 1. Lip saccate; panicles axillary; mid-lobe of lip not as above :                               |     |                     |
| 2. Leaves oblong, entire, unequally deeply cleft at apex  | ... | <i>A. praemorsa</i> |
| 2. Leaves lorate, shortly 3-lobed   | ... | <i>A. rigida</i>    |

*Acampe ochracea* (Lindl.) Hochr. in Bull. New York Bot. Gard. 6:270. 1910; Sant. & Kap. Orch. Bombay 234. 1966; Jayaweera in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 2: 227, f. 100. 1981. *Saccolabium ochraceum* Lindl. in Edw. Bot. Reg. Misc. 2. 1842; Hook. f. Fl. Brit. India 6: 62. 1890.

Epiphytes, erect or pendulous. Leaves 8.5-20.0 x 0.6-2.0 cm, coriaceous, sheathing at base, narrowly oblong, entire, shallowly and unequally 2-lobulate at apex. Inflorescence 8-20 cm long, panicles lax, branching, longer or shorter than leaves. Flowers pedicelled, bracteate, yellow with pale-red, transverse markings. Capsules with stalk, c 3.5 x 0.7 cm, linear-oblong, faintly ribbed.

*Fls.* : December; *Frts.* : May.

*Illus.* : Jayaweera in Dassan. & Fosb. *op.cit.*

*Distrib.* : Rare. Raigad.

**A. praemorsa** (Roxb.) Blatt. & McC. in J. Bombay nat. Hist. Soc. 35: 495. 1932; Sant. & Kap. Orch. Bombay 233, t. 54. 1966. *Epidendrum praemorsum* Roxb. Pl. Cor. 1: 34, t. 43. 1795. *Acampe wightiana* Lindl. Fol. Orchid. 2. 1853; Cooke, Fl. Pres. Bombay 3: 209. 1958 (Repr. ed.). *Saccolabium praemorsum* (Roxb.) Hook. f. Fl. Brit. India 6: 62. 1890. *S. wightianum* (Lindl.) Hook. f. *op.cit.*

Stem, c 1.5 cm thick, sheathed. Leaves thick, coriaceous, channelled, 8-30 x 1.5-3.0 cm. Flowers yellow in compact, corymbose racemes. Capsules 6-7 x 0.6-0.8 cm, subcylindric, longitudinally ribbed.

*Fls. & Frts.* : February-August.

*Illus.* : Wight, Ic. t. 1670. 1851 (*Vanda wightiana* Lindl.); Sant. & Kap. *op.cit.*; Matthew, Ilus. Fl. Tamilnadu Carnatic 2: t. 718. 1982.

*Distrib.* : Bombay; Pune; Raigad; Ratnagiri; Sindhudurg; Thane.

**A. rigida** (Buch.-Ham. ex J. E. Sm.) P.F. Hunt in Kew Bull. 24: 98. 1970; Jayaweera in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 2: 229, f. 101. 1981; N.P. Singh & Dawre in J. Econ. Tax. Bot. 4: 1021. 1983. *Aerides rigida* Buch.-Ham. ex J.E. Sm. in Rees, Cyclop. 39. *Aerides* n. 12. 1819; Hook. f. Fl. Brit. India 6: 48. 1890. *Saccolabium longifolium* (Lindl.) Hook. f. *op.cit.* 62, p.p.

Stems stout, 60-90 cm long. Leaves 15-30 x 3.7 cm, thickly coriaceous. Flowers yellow, tinged with red, in many flowered stoutly peduncled panicles; peduncles with racemes, 15-30 cm long, distantly branched. Capsules longitudinally ribbed.

*Fls. & Frts.* : April-September.

*Illus.* : Jayaweera in Dassan. & Fosb. *op.cit.*

*Distrib.* : Rare. Ratnagiri; Sindhudurg.

#### AERIDES Lour.

- |   |     |                       |
|---|-----|-----------------------|
| 1. Spur at base of lip  | ... | <i>A. dalzelliana</i> |
| 1. Spur distant from base of lip :                                  |     |                       |
| 2. Midlobe of lip small, incurved between the much larger sidelobes | ... | <i>A. odoratum</i>    |

2. Midlobe of lip large, sidelobes small :
3. Lip deflexed ... *A. ringens*
3. Lip horizontal or inflexed :
4. Spur long ... *A. maculosum*
4. Spur short:
5. Midlobe of lip hastately ovate, tip rounded ... *A. multiflorum*
5. Midlobe of lip broadly ovate-oblong, obscurely 3-lobed, crenate or toothed ... *A. crispum*

***Aerides crispum*** Lindl. Gen. Sp. Orchid. 239. 1833; Hook. f. Fl. Brit. India 6: 45. 1890; Cooke, Fl. Pres. Bombay 3: 203. 1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 122. 1966. 'Pan-Shing', 'Ruk-Shing'.

Stems 10–25 cm long, thick, sheathed. Leaves 4–24 x 0.5–3.0 cm, thickly coriaceous, oblong, with 2 unequal rounded lobes at apex. Inflorescence 10–30 cm long, erect or drooping. Flowers c 3 cm across, pinkish-white, bracteate, pedicellate. Capsules 2.0–3.5 x 0.6 cm, oblong-ellipsoid, strongly ridged.

*Fls. & Frts.* : May–October.

*Illus.* : Wight, Ic. t. 1677. 1851 (*A. lindleyana*); Fyson, Fl. Nilgiri Pulney Hill tops 2: t. 248. 1915 (Repr. ed. 1974).

*Distrib.* : Ahmednagar; Kolhapur; Nasik; Pune; Raigad; Satara; Sindhudurg; Thane.

***A. dalzelliana*** (Sant.) Garay in Bot. Mus. Leafl. Harv. Univ. 23(4): 158. 1972. *Sarcochilus dalzelliana* Sant. in Kew Bull. 1949: 498. 1949. *Saccolabium viridiflorum* (Dalz.) Lindl. in J. Linn. Soc. 3: 36. 1858; Hook. f. Fl. Brit. India 6: 63. 1890. *Sarcochilus viridiflorus* T. Cooke, Fl. Pres. Bombay 2: 697. 1907 [3: 201. 1958 (Repr. ed.)] *non* Hook. f. 1890. *Smithsonia viridiflora* (Dalz.) Sald. in J. Bombay nat. Hist. Soc. 71: 75. 1974.

Stems short, sheathed. Leaves usually 2 with a small one in between, 2–9 x 1–2 cm, elliptic-lanceolate, tapering at base, entire, unequally bilobed at apex, lobes entire. Racemes corymbose, umbellate at apex of peduncle. Flowers greenish-white, pedicellate, bracteate. Capsules 3–5 cm long, narrowly fusiform, ribbed, purplish-brown.

*Fls. & Frts.* : May–March.

*Illus.* : Sant. & Kap. *op.cit.*

*Distrib.* : Dhule; Kolhapur; Pune; Satara; Sindhudurg; Thane.

**A. maculosum** Lindl. in Edw. Bot. Reg. t. 58. 1845; Hook. f. Fl. Brit. India 6: 45. 1890; Cooke, Fl. Pres. Bombay 3: 203. 1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 120, t. 30. 1966.

Stems 1.0–1.5 cm thick, sheathed. Leaves channelled, coriaceous, 3–23 x 0.8–3.0 cm, linear-oblong, broadest at middle, with 2 unequal, rounded lobes at apex. Inflorescence up to 24 cm long, simple or branched. Flowers c 2.5 cm in diam., pink, pedicelled, bracteate. Capsules 2–5 x 0.6–1.0 cm, obovoid, strongly ribbed, shortly stalked.

*Fls. & Frts.* : May–October.

*Illus.* : Wight, Ic. tt. 1675–76. 1851 (*Saccolabium speciosum*); Sant. & Kap. *op.cit.*; Sald. in Sald. & Nicols. Fl. Hassan Dt. 813, f. 122. 1976.

*Distrib.* : Ahmednagar; Amaravati; Kolhapur; Nasik; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

**A. multiflorum** Roxb. Pl. Cor. 3: 68, t. 271. 1820; Hook. f. Fl. Brit. India 6: 44. 1890; Mukerjee in Bull. Bot. Surv. India 14: 94. 1972.

Stems 10–25 cm long, stout. Leaves imbricate, narrowly oblong, 15–25 cm long, deeply channelled, keeled, apex 2-lobed. Flowers 2–3 cm in diam., pink or rose-purple, in axillary racemes longer than leaves, decurved. Capsules 1.75–2.0 cm long, subclavate, stoutly pedicelled.

*Fls. & Frts.* : April–June.

*Illus.* : Bose & Bhatt. Orchid. India 58. 1980.

*Distrib.* : Pune; Satara.

**A. odoratum** Lour. Fl. Cochinch. 525. 1790; Hook. f. Fl. Brit. India 6: 47. 1890; Cooke, Fl. Pres. Bombay 3: 204. 1958 (Repr.ed.); Holtt. Rev. Fl. Malaya 1: 698, f. 215. 1957.

Stems 10–30 cm long, stout. Leaves 15–30 x 2.5–4.5 cm, flat, keeled, oblong, blunt, obtusely 2-lobed at apex. Flowers fragrant, white with pink spots, in supra-axillary, deflexed, many-flowered racemes, as long as or longer than leaves; spur hollow, decurved. Capsules 2.5–3.7 cm long, oblong-clavate, angles obtuse.

*Fls. & Frts.* : May–July.

*Illus.* : Holtt. *op.cit.*; Bose & Bhatt. Orchid. India 59. 1980.

*Distrib.* : Konkan (Hook. f. *op.cit.*); Pune.

**A. ringens** (Lindl.) C.E.C. Fischer in Kew Bull. Misc. Inf. Kew 1928: 284. 1928; Sant. & Kap. Orch. Bombay 119, t. 29. 1966.

*Saccolabium ringens* Lindl. Gen. Sp. Orchid. 221. 1833. *Aerides radicosum* A. Rich. in Ann. Sci. Nat. 2, 15: 65, t.i.c. 1841; Hook. f. Fl. Brit. India 6: 46. 1890; Cooke, Fl. Pres. Bombay 3: 204. 1958 (Repr. ed.).  
*A. linearis* Hook. f. *op.cit.* 47.

Stems 1.0–1.5 cm thick, sheathed. Leaves 5–21 x 0.3–0.7 cm, coriaceous, channelled, linear or linear-oblong, bilobed at apex. Racemes 6–26 cm long, erect, rigid, often branched. Flowers pink or mauve, pedicellate, bracteate, c 1.5 cm long. Capsules c 1.5 x 0.6 cm, obovoid-oblong, strongly ribbed.

Fls. & Frts. : March–July.

Illus. : Wight, Ic. t. 1678. 1851 (*Saccolabium paniculatum*); Sant. & Kap. *op.cit.*; Jayaweera in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 2: 206, f. 91. 1981; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 713. 1982.

Distrib. : Rare. Bombay; Satara.

BULBOPHYLLUM Du Petit–Thou. (*nom. cons.*)

- |   |                             |
|---|-----------------------------|
| 1. Pseudobulbs with 2 or more thin, membranous leaves; leaves deciduous during flowering; flowers umbellate | ... <i>B. fimbriatum</i>    |
| 1. Pseudobulbs with a single thick coriaceous leaf on top; leaves persistent; flowers in racemes            | ... <i>B. neilgherrense</i> |

**Bulbophyllum fimbriatum** (Lindl. ) Reichb. f. in Walp. Ann. 6: 260. 1861; Sald. in Sald. & Nicols. Fl. Hassan Dt. 814. 1976. *Cirrhopetalum fimbriatum* Lindl. in Edw. Bot. Reg. Misc. 24: 72. 1839; Hook. f. Fl. Brit. India 5: 774. 1890; Cooke, Fl. Pres. Bombay 3: 188. 1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 198, t. 48. 1966.

Rhizomes 0.2–0.4 cm thick, brown, woody, bearing pseudobulbs, up to 2 cm apart. Pseudobulbs 1.0–2.5 x 0.8–2.0 cm, yellow, conical-ovoid, irregularly and longitudinally grooved. Leaves 4–12 x 1.1–2.0 cm, oblong-lanceolate or elliptic, acute, margins whitish, minutely papillate. Scape 8–20 x 0.1–0.2 cm. Flowers greenish or creamy-purple, c 2 cm long, bracteate, pedicellate. Capsules 1.0–1.2 x 0.6 cm, ob-pyriform, green.

Fls. & Frts. : June–April.

Illus. : Wight, Ic. t. 1665. 1851; Sant. & Kap. *op.cit.* (*Cirrhopetalum fimbriatum*).

Distrib. : Pune; Satara; Sindhudurg.

**B. neilgherrense** Wight, Ic. t. 1650. 1851; Hook. f. Fl. Brit. India 5: 761. 1890; Cooke, Fl. Pres. Bombay 3: 189. 1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 195, t. 47. 1966.

Epiphytes or lithophytes. Rhizomes 0.2–0.3 cm thick, creeping, producing at intervals a pseudobulb and a cluster of roots. Pseudobulbs 2–8 x 2–3 cm, ovoid or conical-ovoid, yellowish-green, irregularly 3–5-angled. Leaves 4–15 x 1.5–3.5 cm, oblong or elliptic, obtuse, emarginate or entire. Inflorescence up to 12 cm long, arising from base of a pseudobulb, somewhat drooping, dense. Flowers c 1.5 cm long, dull yellow, pedicellate, bracteate.

*Fls.* : July–December.

*Illus.* : Wight, *op. cit.*; Sant. & Kap. *op. cit.*; Joseph in Rec. Bot. Surv. India 22: 93, f. 74a–74b. 1982.

*Distrib.* : Bombay; Pune; Sindhudurg.

#### CHEIROSTYLIS BL.

- |   |     |                      |
|---|-----|----------------------|
| 1. Racemes puberulous, 8–10-flowered; petals oblong-obovate             | ... | <i>C. parvifolia</i> |
| 1. Racemes glandular-pubescent, 2–3-flowered; petals lanceolate-falcate | ... | <i>C. flabellata</i> |

**Cheirostylis flabellata** Wight, Ic. t. 1727. 1852; Hook. f. Fl. Brit. India 6: 105. 1890; Cooke, Fl. Pres. Bombay 3: 214. 1958 (Repr. ed.); Jayaweera in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 2: 300, f. 133. 1981.

Herbs, 10–20 cm high, internodes swollen. Leaves thin, petiolate, 2–4, 0.9–2.0 x 0.7–1.2 cm, ovate, apex acute, base rounded or subcordate, 3-nerved. Flowers white c 1.0 x 0.6 cm, in long-peduncled, terminal, 2 or 3-flowered racemes. Capsules 0.5–3.5 cm long, globular or pyriform.

*Fls. & Frts.* : November.

*Illus.* : Wight, *op. cit.*; Jayaweera in Dassan. & Fosb. *op. cit.*; Joseph, Orch. Nilgiris 64, t. 31. 1987.

*Distrib.* : Ratnagiri; Satara.

**C. parvifolia** Lindl. in Bot. Reg. Misc. 20. 1839; Hook. f. Fl. Brit. India 6: 105. 1890; Jayaweera in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 2: 298, f. 132. 1981.

Terrestrial herbs, up to 15 cm tall; stems erect or prostrate; internodes short, green, upper ones enclosed in hyaline sheaths. Leaves petiolate, ovate or ovate-lanceolate, membranous, acuminate at apex. Flowers pinkish-white, in 8–10-flowered racemes; lip longer than sepals, column with 2 parallel appendages in front.

*Fls. & Frts.* : November – February.

*Illus.* : Jayweera in Dassan. & Fosb. *op. cit.*

*Distrib.* : Rare. Sindhudurg (S. M. Almeida, Fl. Savantwadi 2: 5–6.1990).

#### CLEISOSTOMA Bl.

*Cleisostoma tenuifolium* (L.) Garay in Bot. Mus. Leaf. Harv. Univ. 23(4): 175. 1972. *Epidendrum tenuifolium* L. Sp. Pl. 952. 1753. *Sarcanthus peninsularis* Dalz. in Hook. Kew J. Bot. 3: 343. 1851; Hook. f. Fl. Brit. India 6: 67.1890; Cooke, Fl. Pres. Bombay 3: 210. 1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 230, t. 53. 1966.

Epiphytes, pendulous; stems 20–24 cm long. Leaves 6–12 x 0.6–1.0 cm, linear-oblong, fleshy, notched and acuminate at tip. Flowers reddish-yellow, in downwards pointing, leaf opposed racemes; sepals spreading, fleshy, yellow with red margins, broadly oblong; petals fleshy, oblong, lip white, 3-lobed, midlobe triangular, larger than lateral ones, spur arched. Capsules 1.7–1.9 x 0.6–0.8 cm, narrowly oblong, almost sessile, strongly ribbed.

*Fls.* : June–July. *Frts.* : November.

*Illus.* : Wight, Ic. t. 1747. (May)1851 (*Sarcanthus pauciflorus*); Sant. & Kap. *op. cit.*

*Distrib.* : Rare in evergreen forests. Sindhudurg.

#### COELOGYNE Lindl. ("Caelogyne")

*Coelogyne nitida* (Wall. ex D. Don) Lindl. Gen. Sp. Orchid. 40. 1830; S. Das & Jain in Fasc. Fl. India 5: 19, t. 1 (2), figs. 5a & b. 1980. *Cymbidium nitidum* Wall. ex D. Don, Prodr. Fl. Nepal. 35. 1825. *Coelogyne ochracea* Lindl. in Edw. Bot. Reg. 32: t. 69. 1846; Hook. f. Fl. Brit. India 5: 831. 1890.

Pseudobulbs 2.4–6.0 x 0.8–3.5 cm, oblong, subquadrangular. Leaves petioled, 7.0–21.5 x 1.5–3.5 cm. Inflorescence 11–24 cm long, 4–8-flowered. Flowers 2.5–5.3 cm across, white.

*Fls. & Frts.* : March–June.

*Illus.* : King & Pantl. in Ann. Roy. Bot. Gard. Calcutta 8: 132, t. 182. 1898 (*Coelogyne ochracea*).

*Distrib.* : Rare. Pune.

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## COTTONIA Wight

**Cottonia peduncularis** (Lindl.) Reichb. f. in Cat. Orchid. Schiller 52. 1857; Sant. & Kap. Orch. Bombay 222. 1966. *Vanda peduncularis* Lindl. Gen. Sp. Orchid. 216. 1833. *Cottonia macrostachya* Wight, Ic. t. 1755. 1851; Hook. f. Fl. Brit. India 6: 26. 1890; Cooke, Fl. Pres. Bombay 3: 206. 1958 (Repr. ed.).

Stems 0.7–1.0 cm thick, closely sheathed. Leaves 5–17 x 1–2 cm, lorate, spreading, sessile, narrowly elliptic-oblong, entire, coriaceous, keeled on underside and abruptly ending in 2 unequal rounded lobes with a broad acute sinus in between. Flowers brownish-yellow, few, in a raceme at apex of branches of peduncle, bracteate, pedicellate. Capsules 5–6 x 0.5–0.7 cm, oblong-fusiform, strongly ribbed.

*Fls. & Frts.* : January–May.

*Illus.* : Wight, *op.cit.*; Jayaweera in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 2: 262, f. 116. 1981.

*Distrib.* : Pune; Sindhudurg; Thane.

## CYMBIDIUM Swartz

**Cymbidium aloifolium** (L) Swartz in Nov. Act. Reg. Soc. Sci. Upsal. 2, 6: 73. 1799; Hook. f. Fl. Brit. India 6: 10. 1890; Cooke, Fl. Pres. Bombay 3: 199. 1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 206. 1966; Seth in Kew Bull. 37: 399. 1982. *Epidendrum aloifolium* L. Sp. Pl. 953. 1753. *Cymbidium intermedium* Jones in Reinwardtia 9:71.1974.

Epiphytes. Pseudobulbs 4–6 cm long, ovoid, sheathed by leaf bases. Leaves 20–55 x 1–3 cm, coriaceous, oblong, entire, with a prominent midnerve, tapering at base into a 4–10 cm long petiole, apex notched, with 2 unequal rounded lobes. Inflorescence 25–45 cm long, racemes pendulous, sheathed at base. Flowers yellowish-red, bracteate, pedicelled. Capsules c 6.5 x 2.5 cm, ovoid or ellipsoid, longitudinally and shallowly grooved.

*Fls. & Frts.* : May–June.

*Illus.* : Wight, Ic. t. 1753. 1852 (*C. erectum*); Jayaweera in Dassan. Fosb. Rev. Handb. Fl. Ceylon 2: 184, f. 82. 1981; Matthew, Illus. Fl. Tamilnadu Carnatic 2: tt. 721 & 977b. 1982.

*Distrib.* : Bombay; Pune; Raigad; Satara; Sindhudurg.

## DENDROBIUM O. Swartz (nom.cons.)

- |   |     |                         |
|---|-----|-------------------------|
| 1. Mentum absent  | ... | <i>D. lawianum</i>      |
| 1. Mentum present :   |     |                         |
| 2. Inflorescence terminal or both terminal and lateral :  |     |                         |
| 3. Flowers large, 7.5-12.5 cm in diam.  | ... | <i>D. formosum</i>      |
| 3. Flowers small or medium sized :  |     |                         |
| 4. Stem copiously branched  | ... | <i>D. herbaceum</i>     |
| 4. Stem simple or nearly so :   |     |                         |
| 5. Petals much broader than dorsal sepals :   |     |                         |
| 6. Flowers yellow or buff coloured; bracts ovate  | ... | <i>D. ovatum</i>        |
| 6. Flowers white or with a pinkish tinge; bracts lanceolate   | ... | <i>D. barbatulum</i>    |
| 5. Petals not broader than dorsal sepals :  |     |                         |
| 7. Leaves fleshy; peduncles short, somewhat thick; mid-lobe of lip acute  | ... | <i>D. peguanum</i>      |
| 7. Leaves thin, membranous; peduncles 4-5 cm long, filiform, slender; mid-lobe of lip rounded, obtuse or retuse : |     |                         |
| 8. Peduncles straight; bracts equalling pedicels; lip pink with deep purple veins                                 | ... | <i>D. microbulbon</i>   |
| 8. Peduncles zigzag; bracts shorter than pedicels; lip creamish with pink veins                                   | ... | <i>D. nanum</i>         |
| 2. Inflorescence lateral on stem or pseudobulb :  |     |                         |
| 9. Flowers white or more or less purple :   |     |                         |
| 10. Petals as narrow as the sepals or narrower; lip narrower than broad   | ... | <i>D. macrostachyum</i> |
| 10. Petals much broader than the sepals; lip as broad as long or broader :  |     |                         |
| 11. Petals oblong   | ... | <i>D. aphyllum</i>      |
| 11. Petals obovate :  |     |                         |
| 12. Lip sessile, distinctly 3-lobed   | ... | <i>D. aqueum</i>        |
| 12. Lip shortly clawed, obscurely 3-lobed   | ... | <i>D. crepidatum</i>    |
| 9. Flowers golden yellow or pale pink :   |     |                         |
| 13. Stems terete :  |     |                         |
| 14. Base of lip truncate  | ... | <i>D. fimbriatum</i>    |

14. Base of lip  
13. Stems clavate  
15. Mentum  
15. Mentum

*Dendrobium*  
Pres. Madras  
*aphyllum* Roemer  
Hook. Exot. Fl.  
Pres. Bombay  
70. 1957.

Stems slender  
lanceolate, terete  
upwards, deciduous

Fls. & Frs.

Illus. : Hook.

Distrib. : India

*D. aqueum*  
Brit. India 5: 7  
ed.); Gammie in  
Orch. Bombay 9

Pendulous  
gradually thickening  
distichous, 7-  
ovate-lanceolate  
of 2-3 flowers from  
pedicellate, bracts  
strong ridges, green

Fls. & Frts.

Illus. : Wight

Distrib. : Andhra

Note : Cooke

*D. barbatulum*  
India 5: 719. 1890  
Sant. & Kap. Orch.

14. Base of lip cuneate ... *D. hookerianum*  
 13. Stems clavate :  
 15. Mentum subglobose ... *D. densiflorum*  
 15. Mentum rounded ... *D. farmeri*

**Dendrobium aphyllum** (Roxb.) C. E. C. Fischer in Gamble, Fl. Pres. Madras 1416. 1928 [3: 991. 1957 (Repr. ed.)]. *Limodorum aphyllum* Roxb. Pl. Cor. t. 41. 1795. *Dendrobium pierardi* Roxb. in Hook. Exot. Fl. t. 9. 1822; Hook. f. Fl. Brit. India 5: 738. 1890; Cooke, Fl. Pres. Bombay 3: 187. 1958 (Repr. ed.); Holtt. Rev. Fl. Malaya 1: 292, f. 70. 1957.

Stems slender, pendulous, 60–90 cm long. Leaves sessile, ovate-lanceolate, the lowermost 10.0–12.5 cm long, gradually smaller upwards, deciduous. Flowers 2.5–5.0 cm across, usually in pairs.

*Fls. & Frts.* : April–June.

*Illus.* : Holtt. *op.cit.*

*Distrib.* : Pune; Satara.

**D. aqueum** Lindl. in Edw. Bot. Reg. Misc. 6, t. 54. 1843; Hook. f. Fl. Brit. India 5: 739. 1890; Cooke, Fl. Pres. Bombay 3: 187. 1958 (Repr. ed.); Gammie in J. Bombay nat. Hist. Soc. 35: 264. 1931; Sant. & Kap. Orch. Bombay 99, t. 24. 1966.

Pendulous herbs; pseudobulbs 15–45 cm long, thin at base, gradually thickening upwards; internodes sheathed. Leaves alternate, distichous, 7–14 x 2–5 cm, sessile, oblong or oblong-elliptic or ovate-lanceolate, acute, entire, 8–10-nerved. Inflorescence of fascicles of 2–3 flowers from upper portion of each node. Flowers c 3.5 x 3.0 cm, pedicellate, bracteate. Capsules c 4.0 x 1.8 cm, obovoid-pyriform, with 6 strong ridges, greyish-green.

*Fls. & Frts.* : September–May.

*Illus.* : Wight, Ic. t. 1645. 1851 (*D. album*); Sant. & Kap. *op.cit.*

*Distrib.* : Ahmednagar; Kolhapur; Nasik; Pune; Satara; Thane.

*Note* : Cooke (*op.cit.*) included this under cultivated species.

**D. barbatulum** Lindl. Gen. Sp. Orchid. 84. 1830; Hook. f. Fl. Brit. India 5: 719. 1890; Cooke, Fl. Pres. Bombay 3: 184. 1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 93, t. 22. 1966.

Pseudobulbs 1.5–3.2 cm long, leafless during flowering, one-to several-noded. Leaves 4.5–13.0 x 1.5–3.5 cm, alternate, distichous, sheathing at base, lanceolate to ovate-lanceolate, acute, entire. Racemes 1–27-flowered, up to 25 cm long, erect. Flowers 2.5–4.0 x 2.5–4.5 cm. Capsules c 2.2 x 1.2 cm, ellipsoid, greenish-purple with 3 broad and 3 narrow bands, beaked.

*Fls. & Frts.* : January–July.

*Illus.* : Sant. & Kap. *op. cit.*

*Distrib.* : Kolhapur; Nasik; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

**D. crepidatum** Lindl. in Paxt. Fl. Gard. 1: 63, f. 45. 1850; Hook. f. Fl. Brit. India 5: 740. 1890; Cooke, Fl. Pres. Bombay 3: 185. 1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 101. 1966. 'Bechu', 'Nangli'.

Pendulous epiphytes. Pseudobulbs greenish-yellow, 8–20 x 0.6–2.0 cm, narrow at base, thickening upwards. Leaves 4–11 x 0.5–1.5 cm, membranous, sheathing, oblong-lanceolate, acute, entire, many-nerved. Flowers c 3.5 cm across, in pairs from nodes of apical parts of pseudobulbs, pedicellate, yellowish-white. Capsules c 1.5 cm long, fusiform.

*Fls. & Frts.* : September–May.

*Illus.* : Bose & Bhatt. Orchid. India 205. 1980.

*Distrib.* : Kolhapur; Pune; Raigad; Satara; Sindhudurg.

**D. densiflorum** Wall. ex Lindl. in Wall. Pl. As. Rar. 1: 34, t. 40. 1830; Hook. f. Fl. Brit. India 5: 748. 1890.

Stems 30–45 cm high, narrowly clavate. Leaves subterminal, 10–15 cm long, acute. Flowers c 5 cm across, white or yellow, crowded in decurved racemes. Capsules c 7.5 cm long.

*Illus.* : Bose & Bhatt. Orchid. India 208. 1980.

*Distrib.* : Pune.

**D. farmeri** Paxt. in Bot. Mag. 15: 241. 1849; Hook. f. Fl. Brit. India 5: 750. 1890; Cooke, Fl. Pres. Bombay 3: 188. 1958 (Repr. ed.); Holtt. Rev. Fl. Malaya 1: 282, f. 65. 1957.

Stems 25–45 cm long, clavate, 4-angled. Leaves 2–4, 10–20 cm long, near apex of stems, elliptic-oblong, persistent. Flowers c 5 cm across; lip suborbicular; disk deep yellow.

*Illus.* : Holt

*Distrib.* : Ra

**D. fimbriat**  
India 5: 745. 1890

Stems c 1 m  
acuminate. Flowe  
leafy stems.

*Illus.* : Bose &

*Distrib.* : Ra

**D. formosun**  
1830; Hook. f. Fl.  
186. 1958 (Repr. ed

Stems 30–45  
c 12.5 cm long, ov  
Flowers white, in t

*Fls. & Frts.* : M

*Illus.* : Bose &

*Distrib.* : Rare

**D. herbaceu**  
Brit. India 5: 719.  
ed.); Sant & Kap. O

Epiphytic her  
upwards. Leaves  
caducous, alternate  
subobtus, entire. In  
terminal. Flowers c  
Capsules c 1.8 x 0  
tapering towards ba

*Fls. & Frts.* : Se

*Illus.* : Wight,  
*op. cit.*

*Distrib.* : Ahme

**D. hookerian**  
Brit. India 5: 745. 18

*Illus.* : Holtt. *op. cit.*; Bose & Bhatt. Orchid. India 211. 1980.

*Distrib.* : Rare. Pune.

**D. fimbriatum** Hook. Exot. Fl. 1: t. 71. 1823; Hook. f. Fl. Brit. India 5: 745. 1890; Mukerjee in Bull. Bot. Surv. India 14: 96. 1972.

Stems c 1 m high, base swollen. Leaves 15–20 cm long, lanceolate, acuminate. Flowers 5.0–7.5 cm across, in pendulous racemes usually on leafy stems.

*Illus.* : Bose & Bhatt. Orchid. India 212. 1980.

*Distrib.* : Rare. Pune.

**D. formosum** Roxb. ex Lindl. in Wall. Pl. As. Rar. 1: 34, t. 39. 1830; Hook. f. Fl. Brit. India 5: 721. 1890; Cooke, Fl. Pres. Bombay 3: 186. 1958 (Repr. ed.); Mukerjee in Bull. Bot. Surv. India 14: 96. 1972.

Stems 30–45 cm long, cylindric, stout, sheaths pubescent. Leaves c 12.5 cm long, ovate-oblong, amplexicaul, unequally 2-lobed at apex. Flowers white, in terminal racemes; lip broadly obovate, entire.

*Fls. & Frts.* : May–June.

*Illus.* : Bose & Bhatt. Orchid. India 213. 1980.

*Distrib.* : Rare. Pune.

**D. herbaceum** Lindl. in Edw. Bot. Reg. 26: 69. 1840; Hook. f. Fl. Brit. India 5: 719. 1890; Cooke, Fl. Pres. Bombay 3: 184. 1958 (Repr. ed.); Sant & Kap. Orch. Bombay 82, t. 17. 1966.

Epiphytic herbs. Pseudobulbs 30–90 x 0.7–1.5 cm, thickening upwards. Leaves 3–11 x 0.4–1.3 cm, sessile, sheathing at base, caducous, alternate, distichous, linear-oblong or lanceolate, acute or subobtuse, entire. Inflorescence appearing after leaf-fall, 2–5-flowered terminal. Flowers c 0.7 x 1.0 cm, greenish-white, pedicellate, bracteate. Capsules c 1.8 x 0.4 cm, narrowly fusiform, broad at apex, sharply tapering towards base.

*Fls. & Frts.* : September–April.

*Illus.* : Wight, Ic. t. 1648. 1851 (*D. ramosissimum*); Sant. & Kap. *op. cit.*

*Distrib.* : Ahmednagar; Nasik; Pune; Satara; Sindhudurg; Thane.

**D. hookerianum** Lindl. in J. Linn. Soc. 3: 8. 1859; Hook. f. Fl. Brit. India 5: 745. 1890.

Pseudobulbs up to 20 cm long, terete, base swollen. Leaves 5–15 cm long, oblong-lanceolate, acuminate. Flowers 5–10 cm across, golden yellow with purple blotches, in pendulous racemes. Capsules c 7.5 cm, fusiform.

*Illus.* : Bose & Bhatt. Orchid. India 218.1980.

*Distrib.* : Rare. Pune.

**D. lawianum** Lindl. in J. Linn. Soc. 3: 10. 1859 ('*lawanum*'); Sant. & Kap. Orch. Bombay 102, t. 25.1966. *D. crepidatum sensu* Hook. f. Fl. Brit. India 5: 740. 1890, p.p. non Lindl. 1850.

Pendulous epiphytes. Pseudobulbs 5–25 cm long, leafless at time of flowering. Leaves 4.5–10.5 x 0.5–1.7 cm, distichous, sessile, sheathing at base, lanceolate or oblong-lanceolate, acute, entire, usually with 5 prominent nerves and several faint ones. Flowers subregular, shallowly cupshaped, from nodes in pairs or solitary, white. Capsules c 2 x 1 cm, ovoid, pale-green, ribbed, surmounted by the hardened pale brown column.

*Fls. & Frts.* : March–May.

*Illus.* : Sant. & Kap. *op.cit.*

*Distrib.* : Satara; Sindhudurg.

**D. macrostachyum** Lindl. Gen. Sp. Orchid. 78. 1830; Hook. f. Fl. Brit. India 5: 735. 1890; Cooke, Fl. Pres. Bombay 3: 185. 1958 (Repr.ed.); Sant. & Kap. Orch. Bombay 96, t. 23. 1966; Jayaweera in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 2: 90, t.41.1981.

Pendulous epiphytes. Pseudobulbs leafless during flowering, 7–50 cm long. Leaves alternate, distichous, somewhat coriaceous, completely and closely sheathing the node below, 2–9 x 0.3–2.5 cm, narrowly oblong or ovate-lanceolate, acute, entire. Inflorescence solitary or in cymes. Flowers c 2.5 x 2.0 cm, pedicellate. Capsules 3.5–4.0 x 0.6 cm, narrowly spindle-shaped, beaked.

*Fls. & Frts.* : May–December.

*Illus.* : Wight, Ic. t. 1647. 1851; Sant. & Kap. *op.cit.*; Jayaweera in Dassan. & Fosb. *op.cit.*

*Distrib.* : Pune; Satara; Sindhudurg.

**D. microbulbon** A. Rich. in Ann. Sci. Nat. 2, 15:19, t. 8. 1841; Hook. f. Fl. Brit. India 5: 716. 1890; Cooke, Fl. Pres. Bombay 3: 183. 1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 87, t. 19.1966.

Pseudobulb  
flowering, co  
sessile, sheat  
nerved. Inflor  
pseudobulb. I  
or obovoid.

*Fls. & Frts.*

*Illus.* : W

*Distrib.*  
Sindhudurg;

**D. nanum**  
India 5: 717.  
567. 1905 &  
ed.); Sant. & K

Epiphyte  
conical, 1–4  
sessile, shea  
lanceolate, ob  
Flowers c 1.5  
cm, stalked, ov

*Fls. & Frts.*

*Illus.* : Sa  
f. 83a–83c. 198

*Distrib.* :

**D. ovatum**  
& Kap. Orch. I  
4: 101. 1805. I  
Hook. f. Fl. Br  
1958 (Repr. ed.

Pseudobulb  
flowering. Leav  
1.2–3.0 cm, e  
Inflorescence i  
long, several-fl  
oblong-ovoid, p

*Fls. & Frts.*

Pseudobulbs 1-2 x 1 cm, crowded, mauve-brown, leafless during flowering, conical, 1-3-jointed. Leaves caducous, 2-14 x 0.3-1.3 cm, sessile, sheathing at base, linear to oblong-lanceolate, acute, entire, 1-nerved. Inflorescence in racemes, 1.5-10.0 cm long, erect, 1-3 at apex of pseudobulb. Flowers 1.0-1.2 x 0.7-0.8 cm. Capsules c 1.0 x 0.6 cm, ovoid or obovoid.

*Fls. & Frts.* : December-May.

*Illus.* : Wight, Ic. t. 1643. 1853 (*D. humile*); Sant. & Kap. *op.cit.*

*Distrib.* : Kolhapur; Nasik; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

**D. nanum** Hook. f. in Hook. Ic. Pl. 19: t. 1853. 1889 & Fl. Brit. India 5: 717. 1890. *D. mabelae* Gammie in J. Bombay nat. Hist. Soc. 16: 567. 1905 & 35: 262. 1931; Cooke, Fl. Pres. Bombay 3: 183. 1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 89, t. 20. 1966.

Epiphytes. Pseudobulbs 1-4 x 0.7-2.0 cm, yellowish-green, ovoid-conical, 1-4-noded. Leaves 2-4, alternate, distichous, subcoriaceous, sessile, sheathing at base, 3-8 x 0.4-0.8 cm, oblong or oblong-lanceolate, obtuse, entire. Inflorescence 1-3 per plant, 5-12 cm long. Flowers c 1.5 x 1.0 cm, brown or brownish-green. Capsules c 2.5 x 0.7 cm, stalked, ovoid, ribbed.

*Fls. & Frts.* : July-April.

*Illus.* : Sant. & Kap. *op.cit.*; Joseph in Rec. Bot. Surv. India 22: 100, f. 83a-83c. 1982; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 710. 1982.

*Distrib.* : Nasik; Satara.

**D. ovatum** (Willd.) Kranzl. In Engl. Pflanzenr. 45: 71. 1910; Sant. & Kap. Orch. Bombay 91, t. 21. 1966. *Cymbidium ovatum* Willd. Sp. Pl. 4: 101. 1805. *Dendrobium chlorops* Lindl. in Edw. Bot. Reg. 44. 1844; Hook. f. Fl. Brit. India 5: 719. 1890; Cooke, Fl. Pres. Bombay 3: 184. 1958 (Repr. ed.).

Pseudobulbs up to 50 cm long, mauve-brown, leafless during flowering. Leaves alternate, membranous, sheathing at base, 5-11 x 1.2-3.0 cm, elliptic-oblong or oblong-lanceolate, acute, entire. Inflorescence in racemes from apex of pseudobulb; racemes 3-15 cm long, several-flowered. Flowers c 1.5 cm across. Capsules c 1.8 x 0.8 cm, oblong-ovoid, purple, ribbed.

*Fls. & Frts.* : September-March.

*Illus.* : Wight, Ic. t. 910. 1844-45 non Lindl. 1830 (*D. barbatulum*); Sant. & Kap. *op. cit.*

*Distrib.* : Kolhapur; Nasik; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

**D. peguanum** Lindl. In J. Proc. Linn. Soc. 3: 19. 1859; Sant. & Kap. Orch. Bombay 84, t. 18. 1966. *D. pygmaeum* Lindl. Gen. Sp. Orchid. 85. 1830 non J.E. Sm. ex Rees 1808; Hook. f. Fl. Brit. India 5: 717. 1890. *D. microbulbon* Blatt. & McC. in J. Bombay nat. Hist. Soc. 35: 262, f. 7. 1931 non A. Rich. 1845.

Pseudobulbs 1-6 cm long, ovoid-conical to oblong-ovoid, up to 2 cm in diam., usually 2-4-noded. Leaves 2-4, 2.5-5.0 x 0.6-2.0 cm, sessile, broadly elliptic or elliptic-oblong, subacute or obtuse. Racemes 1-5, arising from apex of pseudobulb, with a few scarious, sheathing bracts at base, 1-flowered, up to 7 cm long. Flowers c 1.2 cm long, shortly pedicellate, bracteate. Capsules c 0.7 x 0.5 cm, dark brown, ribbed.

*Fls. & Frts.* : October-March.

*Illus.* : Blatt. & McC. *op. cit.*; Sant. *et al.* in J. Bombay nat. Hist. Soc. 55: 484, t. 5. 1958; Sant. & Kap. *op. cit.*

*Distrib.* : Bombay; Nasik; Pune; Thane.

#### DIPLOCENTRUM Lindl.

**Diplocentrum recurvum** Lindl. in Edw. Bot. Reg. 18: sub t. 1522. 1832; Hook. f. Fl. Brit. India 6: 78. 1890; Jayaweera in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 2: 225. 1981.

Epiphytes with 5-15 cm long, stout, non-pseudobulbous, leafy stems; internodes short. Leaves 10-15 x 0.6-0.8 cm, linear, recurved, keeled, unequally and obtusely bifid at apex. Flowers pink, 0.4-0.6 cm broad, crowded towards ends of branches, in shortly peduncled, branched, long-spreading, decurved, many-flowered panicles. Fruits capsular, clavate, c 1.2 cm long.

*Fls. & Frts.* : May-July.

*Illus.* : Wight, Ic. : 1681. 1851 (*D. longifolium*); Joseph in Rec. Bot. Surv. India 22: 124, f. 105a-105b. 1982; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 719. 1982.

*Distrib.* : Scarce on trees. Pune; Sindhudurg.



## FLORA OF MAHARASHTRA STATE

4871

25

ERIA Lindl. (*nom. cons.*)

- |   |     |                       |
|---|-----|-----------------------|
| 1. Flowers solitary                                 | ... | <i>E. reticosa</i>    |
| 1. Flowers in racemes or spikes :                   |     |                       |
| 2. Inflorescence white or yellowish tomentose       | ... | <i>E. pubescens</i>   |
| 2. Inflorescence not as above :                     |     |                       |
| 3. Pseudobulbs ovoid; scapes shorter than leaves    | ... | <i>E. mysorensis</i>  |
| 3. Pseudobulbs discoid; scapes longer than leaves : |     |                       |
| 4. Plants leafless at flowering; scapes zigzag      | ... | <i>E. exilis</i>      |
| 4. Plants leafy at flowering; scapes straight :     |     |                       |
| 5. Sepals and petals with capitate glands           | ... | <i>E. dalzellii</i>   |
| 5. Sepals and petals without glands                 | ... | <i>E. microchilos</i> |

**Eria dalzellii** (Hook. ex Dalz.) Lindl. in J. Linn. Soc. 3: 47. 1859; Hook. f. Fl. Brit. India 5: 789. 1890; Cooke, Fl. Pres. Bombay 3: 193. 1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 151, t. 35. 1966. *Dendrobium dalzellii* Hook. ex Dalz. in Hook. Kew J. Bot. 4: 292. 1852.

Pseudobulbs 0.8–1.5 cm in diam., discoid, principal veins white and flabellate. Leaves 3–5, sessile, sheathing at base, 1–7 x 0.7–1.0 cm, elliptic to oblanceolate, obtuse, minutely papillose at margins. Racemes 3–9 cm long, erect, generally secund or subsecund. Flowers greenish-yellow, bracteate. Capsules c 0.5 x 0.15 cm, ellipsoid to obovoid.

*Fls. & Frts.* : July–October.

*Illus.* : Wight, Ic. t. 1642. 1851 (*Dendrobium filiforme*); Sant. & Kap. *op.cit.*

*Distrib.* : Kolhapur; Nasik; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

**E. exilis** Hook. f. Fl. Brit. India 5: 788. 1890 & in Hook. Ic. Pl. t. 2074 A. 1891; Sant. & Kap. Orch. Bombay 150. 1966. *E. minima* Blatt. & McC. In J. Bombay nat. Hist. Soc. 35: 274, f. 2. 1931.

Pseudobulbs 0.3–1.2 cm across, flat, irregularly orbicular. Leaves sessile, 2–3, arising from a pseudostem, 0.2–0.3 cm high, lamina 0.2–2.5 x 0.2–1.1 cm, obovate-elliptic or oblong to obovate, tapering to a sheathing base, rounded apiculate at apex, margins entire, minutely papillose. Scape 1–4 cm long, flexuose, capillary. Flowers up to 12 in a raceme, each c 0.32 cm long, subsessile, greenish-white. Capsules c 0.5 x 0.15 cm, broadly ovoid, green, faintly ribbed.

*Fls. & Frts.* : October–May.

*Illus.* : Blatt. & McC. *op.cit.*

*Distrib.* : Rare. Satara.

*E. microchilos* (Dalz.) Lindl. in J. Linn. Soc. 3: 47. 1858; Cooke, Fl. Pres. Bombay 3: 194. 1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 154, t. 36. 1966. *Dendrobium microchilos* Dalz. in Hook. J. Bot. Kew Gard. Misc. 3: 345. 1851. *Eria dalzellii* sensu Hook. f. Fl. Brit. India 5: 789. 1890 *p.p. non* Lindl. 1858.

Pseudobulbs 0.4–1.0 cm across, pale green, discoid. Leaves 2–5, sessile, 1.5–8.0 x 0.2–6.0 cm, oblong–lanceolate or narrowly linear–oblong, distinctly tapering towards base, apex rounded, mucronulate. Scapes 0.25–0.8 cm long. Flowers pale yellowish–white. Capsules 0.3–0.35 x 0.2 cm, ribbed, stalked.

*Fls. & Frts.* : July–October.

*Illus.* : Sant. & Kap. *op.cit.*

*Distrib.* : Kolhapur; Nasik; Pune; Raigad; Satara; Thane.

*E. mysorensis* Lindl. in J. Linn. Soc. 3: 54. 1858; Hook. f. Fl. Brit. India 5: 793. 1890; Cooke, Fl. Pres. Bombay 3: 194. 1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 149. 1966. *E. pubescens* Wight, Ic. t. 1634. 1851 *non* Lindl. 1825; Hook. f. *op.cit.*

Pseudobulbs 2–3 x 1.2 cm, sheathed. Leaves 3–5, arising from apical portion of pseudobulbs, 5–15 x 1.2–2.0 cm, oblong–lanceolate or elliptic–lanceolate, acute, distinctly tapering at base. Scapes 1–2 per plant. Flowers 1.2–1.6 cm long, white.

*Fls.* : July–October.

*Illus.* : Wight, *op.cit.*; Joseph in Rec. Bot. Surv. India 22: 112, f. 94a–94b. 1982.

*Distrib.* : Konkan (Cooke, *op.cit.*); Satara.

*E. pubescens* (Hook.) Lindl. in Edw. Bot. Reg. 11: t. 904. 1825. *Dendrobium pubescens* Hook. Exot. Fl. 2: t. 124. 1824. *Eria flava* Lindl. Gen. Sp. Orchid. 65. 1830; Hook. f. Fl. Brit. India 5: 801. 1890; S.K. Mukerjee in Bull. Bot. Surv. India 14: 97. 1972.

Rhizome stout; pseudobulbs much compressed, 7–10 cm long, ridged. Leaves up to 5, c 22 cm long, narrowly oblong. Racemes erect, stout, from base of pseudobulbs, as long as leaves, sheathed at base, flowers yellow.

*Fls. & Frts.* : April-May.

*Distrib.* : Rare. Pune.

*E. reticosa* Wight, Ic. t. 1637. 1851; Hook. f. Fl. Brit. India 5: 787. 1890; Cooke, Fl. Pres. Bombay 3: 193. 1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 146, t. 34. 1966. *E. rupestris* Blatt. & McC. in J. Bombay nat. Hist. Soc. 35: 270, f. 6. 1931.

Pseudobulbs 0.7-1.5 cm across, discoid, sheath reticulate. Leaves appearing together with flowers, 2-7 x 0.8-2.0 cm, ovate, broadly oblong or oblong-lanceolate, tapering towards base, apex acute, mucronulate, entire. Scapes arising from sides of upper sheath. Flowers white. Capsules c 1.2 x 0.8 cm, oblong to obconical, truncate at apex, erect, ridges 6.

*Fls. & Frts.* : June-March.

*Illus.* : Wight, *op.cit.*; Blatt. & McC. *op. cit.*; Sant. & Kap. *op. cit.*; Matthew, *Illus. Fl. Tamilnadu Carnatic* 2: t. 705. 1982.

*Distrib.* : Kolhapur; Pune; Satara; Sindhudurg.

*Notes* : Blatt. & McC. (*op.cit.*) distinguished *E. rupestris* from *E. reticosa* Wight on the basis of bilobed mentum and mid-lobe of lip oblong, obtuse, in the former against the entire mentum and ovate, acute mid-lobe of the lip in latter. However, in Wight (*op.cit.*) mentum of *E. reticosa* is emarginate. Therefore, after critical study, Sant. & Kap. (*op. cit.*) have merged it under *reticosa*.

EULOPHIA R. Br. ex Lindl. (*nom. cons.*)

- |  |     |                      |
|--|-----|----------------------|
| 1. Column with a distinct foot   | ... | <i>E. nuda</i>       |
| 1. Column not as above :   |     |                      |
| 2. Flowers appearing long before leaves  | ... | <i>E. dabia</i>      |
| 2. Leaves and flowers appearing simultaneously or nearly so :                    |     |                      |
| 3. Pseudobulbs very large, epigeal, green; leaves narrow; scape often branched : |     |                      |
| 4. Sepals liner-oblong, yellowish-green  | ... | <i>E. epidendrea</i> |
| 4. Sepals lanceolate, green  | ... | <i>E. graminea</i>   |
| 3. Roots tuberous, hypogeal; leaves elliptic-lanceolate; scape unbranched :      |     |                      |
| 5. Lip broader than long; side lobes large                                       | ... | <i>E. ramentacea</i> |

5. Lip longer than broad; side lobes short or absent :

6. Flowers c 1.2 cm long, deep yellow with a few brown spots; lip broadly ovate, entire ... *E. ochreatea*
6. Flowers 1.8–2.2 cm long, greenish-white, often flushed with pale mauve; lip 3-lobed ... *E. herbacea*

*Eulophia dabia* (D. Don) Hochr. in Bull. New York Bot. Gard. 6: 270. 1910; Sant. & Kap. Orch. Bombay 112. 1966. *Bletia dabia* D. Don, Prodr. Fl. Nepal. 30. 1825. *Eulophia campestris* Wall. ex Lindl. Gen. Sp. Orchid. 185. 1833; Hook. f. Fl. Brit. India 6: 4. 1890.

Pseudobulbs tuberous, oblong-orbicular, roots fleshy at junction of stem. Scapes 14–18 cm tall, erect; sheaths oblong, acute, closely appressed, 0.8–1.6 cm long. Racemes 5–11 cm long, lax, subsecund. Flowers c 1 cm long, erect. Capsules c 1.8 x 0.4 cm, oblong-obovoid, drooping.

Fls. & Frts. : January–April.

Illus. : Bose & Bhatt. Orchid. India 275. 1980 (*Eulophia campestris*).

Distrib. : Bombay; Nagpur.

*E. epidendrea* (Retz.) C.E.C. Fischer in Gamble, Fl. Pres. Madras 1434. 1928 [3: 1003. 1957 (Repr. ed.)]; Sant. & Kap. Orch. Bombay 107, t. 26. 1966. *Serapias epidendrea* Retz. Obs. Bot. 6: 65. 1791. *Eulophia virens* R. Br. in Edw. Bot. Reg. subt. 573. 1822; Hook. f. Fl. Brit. India 6: 1. 1890.

Pseudobulbs 3–11 x 2–5 cm, ovate-conical or obpyriform. Leaves alternate, distichous, sheathing at base, lamina 15–35 x 0.7–2.0 cm, linear or linear-lanceolate, apex acute or subacuminate, entire, subcarinate at base. Inflorescence up to 60 cm long, laxly many-flowered. Flowers pale greenish, tinged with maroon c 2.2 x 2.8 cm. Capsules c 4.5 x 1.1 cm, oblong, drooping, pale mauve with 3 pale green, broad bands.

Fls. & Frts. : November–March.

Illus. : Wight, Ic. t. 913. 184–1845 (*Eulophia virens*); Sant. & Kap. op.cit.; Jayaweera in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 2: 169, f. 76. 1981; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 722. 1982.

Distrib. : Rare. Sindhudurg.

*E. graminea* Lindl. Gen. Sp. Orchid. 182. 1833; Hook. f. Fl. Brit. India 6: 2. 1890; Bachulkar & Yadav in J. Econ. Tax. Bot. 17: 329. 1993.

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Pseudobulbs 5-10 x 5-9 cm, conical, pyriform to almost spherical, green, marked with transverse lines of leaf bases. Leaves linear with sheathing leaf bases, lower reduced to sheaths, upper 7-27 x 1.5-2.5 cm. Scapes lateral, 1-2 per pseudobulb, 50-90 x 0.5-0.7 cm. Flowers in racemes. Capsules 2.0-2.5 x 0.7-0.8 cm, ellipsoid-oblong, drooping, yellowish-green.

*Fls. & Frts.* : July-September

*Illus.* : Jayaweera in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 2: 172, f. 77. 1981.

*Distrib.* : It grows in sugarcane fields among clumps of sugarcane around Sangli (Bachulkar & Yadav, *op. cit.*).

*E. herbacea* Lindl. Gen. Sp. Orchid. 182. 1833; Hook. f. Fl. Brit. India 6: 2. 1890; Cooke, Fl. Pres. Bombay 3: 196. 1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 111. 1966.

Pseudobulbs tuberous, 2-3 cm in diam., ovoid to broadly conical, markings transverse, circular. Leaves 10-30 x 3-9 cm, usually 2-5 per plant, elliptic-lanceolate to broadly elliptic, acute or subacuminate, entire, many-nerved. Inflorescence 30-60 cm long, erect, arising in axil of a basal sheath from pseudostem. Flowers in lax racemes.

*Fls.* : July.

*Distrib.* : Bombay; Thane.

*E. nuda* Lindl. Gen. Sp. Orchid. 180. 1833; Hook. f. Fl. Brit. India 6: 5. 1890; Cooke, Fl. Pres. Bombay 3: 197. 1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 115. 1966. 'Ambarkand'.

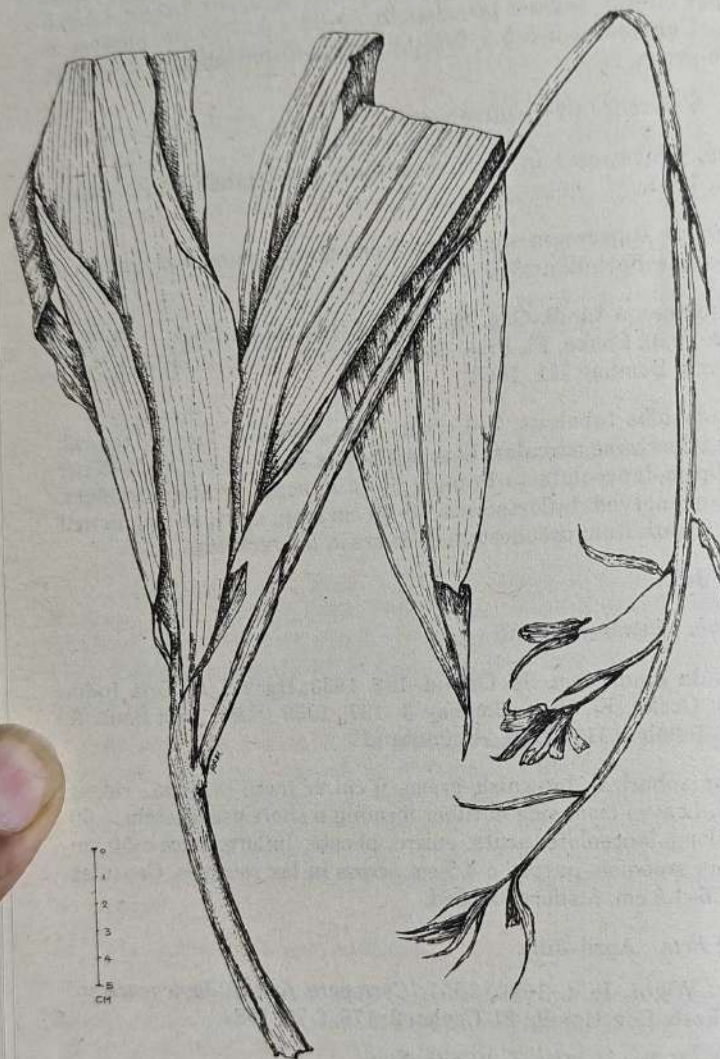
Tubers spherical, brownish-green, 6 cm or more in diam., ridges transverse. Leaves from side of tuber forming a short pseudostem, c 60 x 6 cm, oblong-lanceolate, acute, entire, plicate. Inflorescence c 50 cm tall. Flowers greenish-purple, c 4.5 cm across in lax racemes. Capsules 5.0-5.5 x 1.5-1.8 cm, fusiform, ribbed.

*Fls. & Frts.* : April-July.

*Illus.* : Wight, Ic. t. 1690. 1851 (*Cyrtopera fusca*); Jayaweera in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 2: 176, f. 79. 1981.

*Distrib.* : Kolhapur; Satara; Sindhudurg.

*E. ochreatea* Lindl. in J. Linn. Soc. 3: 24. 1858; Hook. f. Fl. Brit. India 6: 2. 1890; Cooke, Fl. Pres. Bombay 3: 196. 1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 109, t. 27. 1966.

*Eulophia herbsacea* Lindl.

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Pseudobulbs c 4.0 x 2.5 cm, ovoid-conical, markings irregular, transverse and longitudinal. Leaves 2-5, arising from base of pseudobulb, 13-28 x 4-10 cm, sheathing at base, oblong-lanceolate, lanceolate to ovate or ovate-elliptic, acute, entire. Scapes appearing with leaves from pseudostem, 25-45 cm long. Flowers in dense racemes, clustered at top of scape, c 1.5 cm across. Capsules c 2.8 x 1.2 cm, broadly ovoid, deflexed, strongly ridged, green.

*Fls. & Frts.* : June-October.

*Illus.* : Sant. & Kap. *op. cit.*

*Distrib.* : Amaravati; Bombay; Chandrapur; Kolhapur; Pune; Thane.

*E. ramentacea* Lindl. ex Wight, Ic. t. 1666. 1852; Sant. & Kap. Orch. Bombay 113, t. 28. 1966. *E. pratensis* Lindl. in J. Linn. Soc. 3: 25. 1858; Hook. f. Fl. Brit. India 6: 5. 1890; Cooke, Fl. Pres. Bombay 3: 197. 1958 (Repr.ed.). '*Satauri*'.

Pseudobulbs shortly pyramidal or irregularly 3-cornered. Leaves 2-4, appearing before flowers, 11-30 x 1-2 cm, narrowly oblong-lanceolate, acute. Scape 17-48 cm long, erect, from top or side of pseudobulb, 1-2-noded. Flowers pale maroon suffused with yellow, c 2.5 x 3.0 cm, in lax racemes. Capsules c 3.0 x 1.7 cm, drooping, obovoid-oblong, greenish-purple, bands 3, strong and longitudinal.

*Fls. & Frts.* : December-March.

*Illus.* : Sant & Kap. *op. cit.*

*Distrib.* : Kolhapur; Osmanabad; Pune; Raigad; Satara.

#### FLICKINGERIA Hawkes

*Flickingeria macraei* (Lindl.) Seid. in Dansk. Bot. Ark. 34: 39. 1980. *Dendrobium macraei* Lindl. Gen. Sp. Orchid. 75. 1830; Hook. f. Fl. Brit. India 5: 714. 1890 p.p.; Cooke, Fl. Pres. Bombay 3: 182. 1958 (Repr.ed.); Sant. & Kap. Orch. Bombay 79, t. 16. 1966. '*Joiwansi*'.

Stems long, creeping, annulate, profusely branched. Pseudobulbs 2-8 x 0.5-2.0 cm, linear-oblong, fusiform, green or yellow. Leaves 4-10 x 1.0-2.5 cm, sessile, ovate-lanceolate or oblong-elliptic, acute, obtuse or rarely subretuse. Flowers white with a pinkish tinge, obtuse or rarely subretuse. Flowers white with a pinkish tinge, axillary. Capsules 3.5-5.0 cm long, oblong, yellow, ridged.

*Fls. & Frts.* : July–October.

*Illus.* : Sant. & Kap. *op.cit.*; Joseph in Rec. Bot. Surv. India 22: 89, f. 73a–73c. 1982 [*Ephemerantha macraei* (Lindl.) P.F. Hunt & Summerh. in Taxon 10: 105. 1961].

*Distrib.* : Pune; Satara; Sindhudurg.

#### GASTROCHILUS D. Don

*Gastrochilus calceolaris* (Buch.–Ham. ex J. E. Sm.) D. Don, Prodr. Fl. Nepal. 32. 1825; Joseph, Orch. Nilgiris 123, t. 103 a–d. 1982; S. M. Almeida, Fl. Savantwadi 2: 11. 1990. *Aerides calceolare* Buch.–Ham. ex J. E. Sm. in Hook. f. Fl. Brit. India 6: 60. 1890. (*Gastrochilus dasypogon* (auct. non Rees) O. Ktze. 1891; Sant. & Kap. Orch. Bombay 26. 1966

Epiphytes. Leaves unequally lobed at apex. Inflorescence of axillary racemes. Sepals and petals greenish-white; mid lobe of lip raised yellow.

*Fls.* : April–June.

*Illus.* : Wight, Ic. t. 1671. 1851 (*Vanda pulchella*); Joseph, *op. cit.*

*Distrib.* : Rare. Sindhudurg (S. M. Almeida, *op. cit.*).

#### GEODORUM G. Jackson

*Geodorum densiflorum* (Lam.) Schltr. in Feddes Repert. 4: 259. 1929; Sant & Kap. Orch. Bombay 203, t. 50. 1966. *Limodorum densiflorum* Lam. Encycl. 3. 516. 1791–92. *Geodorum dilatatum sensu* Hook. f. Fl. Brit. India 6: 17. 1890 non R. Br. 1813; Cooke, Fl. Pres. Bombay 3: 198. 1958 (Repr. ed.). *G. purpureum* R. Br. in Ait. Hort. Kew. ed. 2, 5: 207. 1813; Hook. f. *op.cit.* 16. 'Haryakand'.

Pseudobulbs c 5 x 3 cm, tuberous, ovoid-conical, greenish-brown, bands transverse, circular. Leaves 1 or 2, forming a pseudostem, 11–40 x 5–10 cm, sheathing at base, subplicate, obovate-oblong, elliptic or elliptic-lanceolate, acute, entire, the upper ones tapering into a long narrow petiole. Scape 28–32 cm tall. Inflorescence c 4 cm long, a compact subcorymbose raceme, facing downwards. Flowers c 1.5 cm long, pinkish-white or white, bracteate, shortly pedicellate. Capsules 3.5–4.0 x 1.0–1.5 cm. ellipsoid, conspicuously 6-ribbed.

*Fls. & Frts.* : June–November.

*Illus.* : Sant & Kap. *op.cit.*; Jayaweera in Dassan. & Fosb. Rev.

Handb. Fl. Ceylon 2: 181, f. 81. 1981; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t.723. 1983.

*Distrib.* : Amaravati; Nasik; Sindhudurg.

## HABENARIA Willd.

1. Petals truncate 2 – fid or 2 partite :
  2. Sepals with filiform tips ... *H. stenopetala*
  2. Sepals not as above :
    3. Leaves clustered at the middle of stem ... *H. multicaudata*
    3. Stem leafy upwards or at or near base :
      4. Stem leafy upwards :
        5. Segments of petals subequal or lower slightly shorter; spur distinctly clavate at apex ... *H. foliosa*
        5. Lower segment of petals less than (or rarely up to) half as long as upper ones; spur scarcely clavate ... *H. digitata*
      4. Stem leafy at or near base only :
        6. Leaves thin; anthers rounded at tip ... *H. rariflora*
        6. Leaves fleshy, coriaceous; anthers distinctly tricuspidate at tip ... *H. grandifloriformis*
1. Petals entire :
  7. Sidelobes of petals broad :
    8. Lip not or hardly longer than lateral sepals ... *H. suaveolens*
    8. Lip much longer than lateral sepals :
      9. Petals narrowly linear; lateral lobes of lip with long filiform tails, midlobe 2 – lobulate with a minute mucro between filiform tailed lobules ... *H. crinifera*
      9. Petals linear-oblong, spatulate or broadly ovate or ovate-oblong; lobes of lip not tailed :
        10. Spur shorter than or equalling ovary ... *H. panchganiensis*
        10. Spur  $1\frac{1}{2}$  – 3 times longer than ovary :
          11. Leaves radical, spreading on ground; ovary sessile or subsessile; lip 0.7–1.2 cm long; stigmatic processes somewhat oblong, white ... *H. plantaginea*
          11. Leaves grouped at base of stem; ovary on long pedicel; lip 1.4–2.9 cm long; stigmatic processes clavate, green ... *H. longicorniculata*

7. Sidelobes of petals very narrow
12. Tubes of anther cells long :  
 13. Leaves flat on ground ... *H. roxburghii*  
 13. Leaves not as above ... *H. commelinifolia*
12. Tubes of anther cells short :  
 14. Leaves flat on ground :  
 15. Petals narrow, linear-oblong; segments of lip filiform; the lateral ones much longer than the midlobe ... *H. diphylla*  
 15. Petals ovate or ovate-oblong; segments of lip linear-oblong, subequal ... *H. crassifolia*
14. Leaves not as above :  
 16. Stem leafy upwards ... *H. heyneana*  
 16. Leaves clustered towards middle or base of stem :  
 17. Leaves clustered at base of stem :  
 18. Floral bracts equal to or longer than ovary ... *H. marginata*  
 18. Floral bracts up to half as long as ovary ... *H. viridiflora*
17. Leaves clustered at middle of stem :  
 19. Spur straight ... *H. ovalifolia*  
 19. Spur incurved :  
 20. Floral bracts and spur longer than ovary ... *H. furcifera*  
 20. Floral bracts and spur shorter than ovary ... *H. hollandiana*

**Habenaria commelinifolia** (Roxb.) Wall. ex Lindl. Gen. Sp. Orchid. 325. 1835; Hook. f. Fl. Brit. India 6: 143. 1890; Cooke, Fl. Pres. Bombay 3: 224. 1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 25, t. 4, f. 11-12. 1966. *Orchis commelinifolia* Roxb. Fl. Ind. 3: 415. 1832.

Herbs, 42-78 cm tall. Tubers 1-2, 4-7 x 1-2 cm, ellipsoid. Leaves alternately distichous, 6-20 x 1.5-3.5 cm, oblong or oblong-lanceolate, acute or rarely subspinescent, entire, minutely papillate. Peduncle 15-35 cm long, bracteate. Spikes 7-20 cm long, somewhat dense. Flowers greenish-white, sessile, bracteate. Capsules fusiform.

*Fls. & Frts.* : August-November.

*Illus.* : Sant. & Kap. *op.cit.*

*Distrib.* : Amaravati; Bhandara; Bombay; Chandrapur; Kolhapur; Pune; Raigad; Sindhudurg; Thane.

#### *H. crass*

Hook. f. Fl. Br.  
1958 (Repr. ed.)

Herbs, 18  
elliptic or broad  
uppermost diff  
2-10 cm, broad  
acute or acum  
Flowers c 0.7 x  
1.5 x 0.4 cm, ell

*Fls. & Frts.*

*Illus.* : Wig  
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1915 (Repr. ed. 1

*Distrib.* : Al

#### *H. crinifer*

India 6:142. 189  
Sant. & Kap. O  
Dassan. & Fosb. J

Tuber 1, ob  
developing into  
oblong-elliptic or  
Scape 7-12 cm lon  
bracteate, white;  
1.5-2.5 cm long.

*Fls. & Frts.* :

*Illus.* : Wight  
Dassan. & Fosb. *op*

*Distrib.* : Rat

#### *H. digitata* L

India 6: 134. 1890  
Sant. & Kap. Orch.

Herbs, 18-60  
pentastichous, 2-1  
elliptic-lanceolate,  
cm long, of few to n

*H. crassifolia* A. Rich. in Ann. Sci. Nat. 2, 15: 72, t. 36. 1841; Hook. f. Fl. Brit. India 6: 151. 1890; Cooke, Fl. Pres. Bombay 3: 227. 1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 22, t. 32. 1966.

Herbs, 18–16 cm tall. Tubers 1–2, 2.5–4.0 x 1.5–2.5 cm, ovate-elliptic or broadly rounded. Leaves variable: lower 2 leaves similar, the uppermost different, often all 3 quite similar; lower leaves 2.5–13.0 x 2–10 cm, broadly ovate, oblong-ovate, oblong-elliptic or suborbicular, acute or acuminate. Racemes 15–55 cm long, lax, many-flowered. Flowers c 0.7 x 0.9 cm, white, bracteate, shortly pedicellate. Capsules c 1.5 x 0.4 cm, ellipsoid, ribbed, beaked.

*Fls. & Frts.* : August–October.

*Illus.* : Wight, Ic. t. 1894. 1851 (*Platanthera brachyphylla* Lindl. Gen. Sp. Orch. 293. 1835); Fyson, Fl. Nilgiri Pulney Hill tops 2: t. 256. 1915 (Repr. ed. 1974); Sant. & Kap. *op. cit.*

*Distrib.* : Ahmednagar; Kolhapur; Nasik; Pune; Ratnagiri; Satara.

*H. crinifera* Lindl. Gen. Sp. Orchid. 323. 1835; Hook. f. Fl. Brit. India 6: 142. 1890; Cooke, Fl. Pres. Bombay 3: 223. 1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 26, t. 4, f. 13–14. 1966; Jayaweera in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 2: 357, f. 158. 1981.

Tuber 1, oblong or ovoid, c 2 x 1 cm, lateral roots above tuber developing into secondary tubers. Leaves 5–13 x 0.8–2.0 cm, oblong-elliptic or oblanceolate, somewhat tapering at base, acute. Scape 7–12 cm long. Racemes 2–4-flowered. Flowers shortly pedicellate, bracteate, white; spur 3.0–3.5 cm long, clavate. Capsules fusiform, 1.5–2.5 cm long.

*Fls. & Frts.* : August.

*Illus.* : Wight, Ic. t. 926. 1845; Sant. & Kap. *op. cit.*; Jayaweera in Dassan. & Fosb. *op. cit.*

*Distrib.* : Ratnagiri; Satara; Sindhudurg.

*H. digitata* Lindl. Gen. Sp. Orchid. 307. 1835; Hook. f. Fl. Brit. India 6: 134. 1890; Cooke, Fl. Pres. Bombay 3: 220. 1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 10, t. 3, f. 7–8. 1966.

Herbs, 18–65 cm tall. Tubers 1–2, ovoid. Leaves alternate, pentastichous, 2–13 x 1.5–5.0 cm, ovate to ovate-oblong or elliptic to elliptic-lanceolate, acute, entire, strongly 3-nerved. Inflorescence 4–13 cm long, of few to many-flowered, dense or lax spikes. Flowers 2.4–2.7

cm long, green or occasionally with a yellowish or whitish tinge, bracteate, shortly pedicellate. Capsules ellipsoid or oblong.

*Fls. & Frts.* : July–December.

*Illus.* : Wight, Ic. t. 1701. 1851 (*H. trinervia*); Duthie in Ann. Roy. Bot. Gard. Calcutta 9: 178, t. 128. 1906 (*H. graveolens*); Sant. & Kap. *op.cit.*; Joseph in Rec. Bot. Surv. India 22: 58, f. 41 a & b. 1982.

*Distrib.* : Bombay; Nasik; Pune; Raigad; Ratnagiri; Satara; Yavatmal.

*H. diphylla* Dalz. in Hook. Kew J. Bot. 2: 262. 1850; Hook. f. Fl. Brit. India 6:151. 1890; Cooke, Fl. Pres. Bombay 3: 227. 1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 21, t. 6, f. 22. 1966.

Herbs, 10–20 cm tall. Tuber usually one, ellipsoid. Leaves 1.5–4.0 x 0.5–4.0 cm, ovate-oblong to suborbicular, acute or obtuse, margin yellowish or pale coloured. Scapes 7–15 cm long. Racemes 2 to many-flowered, lax, up to 10 cm long. Flowers shortly stalked, bracteate, greenish-white. Capsules 1.8–2.0 x 0.03 cm, fusiform, shortly pedicellate, beak 0.2–0.3 cm long.

*Fls. & Frts.* : July–October.

*Illus.* : Wight, Ic. t. 1715. 1851 (*H. jerdoniana*); Sant. & Kap. *op.cit.*

*Distrib.* : Frequent in moist, open situations in plains. Sindhudurg.

*H. foliosa* A. Rich. in Ann. Sci. Nat. 2, 15:71, t. 3A. 1841; Karthik. *et. al.* Fl. Ind. Enum. Monocot. 143. 1989. *H. digitata* var. *foliosa* (A. Rich.) Hook. f. Fl. Brit. India 6:135. 1890; Cooke, Fl. Pres. Bombay 3:220. 1958 (Repr. ed.). *H. gibsonii* var. *foliosa* (A. Rich.) Sant. & Kap. in J. Bombay nat. Hist. Soc. 56: 194, t. 2, f. 6. 1959 & Orch. Bombay 14, t. 2, f. 6. 1966. *H. spencei* Blatt. & McC. in J. Bombay nat. Hist. Soc. 36: 17. 1932.

- |   |     |                      |
|---|-----|----------------------|
| 1. Segments of petals equal or lower slightly longer                            | ... | var. <i>foliosa</i>  |
| 1. Upper segment of petals longer than lower :                                  |     |                      |
| 2. Dorsal sepal 1.0–1.2 x 0.9 cm; lateral sepal 1.8–2.0 x 0.7–0.8 cm            | ... | var. <i>gibsonii</i> |
| 2. Dorsal sepal broader than long, c 0.7 x 0.8 cm; lateral sepal c 0.9 x 0.6 cm | ... | var. <i>foetida</i>  |

var. *foliosa*.

Leaves 3.5–5.0 x 1.5–2.5 cm, elliptic-lanceolate. Flowers in dense racemes; petals linear. Capsules ellipsoid, shortly beaked.

*Fls. &*

*Illus.* :

*Distrib.*

var. *fo*

1984. *H. gib*  
36: 16. 1932;  
1959 & Orch

Herbs.

narrowed at  
long, c 0.7 x 0  
0.5–0.7 x 0.05

*Illus.* : S

*Distrib.* :

var. *gibs*

*H. gibsonii* H  
Bombay 12, t.

Herbs, 15

2.5 cm in diam  
ovate to oblong  
wavy. Infloresc  
white, bracteate

*Fls. & Frts.*

*Illus.* : Sant

*Distrib.* : A

Satara; Thane.

*H. furcifer*

India 6:149. 189  
Sant. & Kap. Orch

Herbs, 40–6

Leaves 13–17 x 3  
subacuminate. In  
flowered; scape  
bracteate. Capsu  
strong, beak of ca

*Fls. & Frts.* : July–September.

*Illus.* : Sant. & Kap. *op.cit.*

*Distrib.* : Pune; Satara.

var. *foetida* (Blatt. & McC.) Bennet in J. Econ. Tax. Bot. 5:452. 1984. *H. gibsonii* var. *foetida* Blatt. & McC. in J. Bombay nat. Hist. Soc. 36: 16. 1932; Sant. & Kap. in J. Bombay nat. Hist. Soc. 56: 194, t. 2, f. 5. 1959 & Orch. Bombay 13, t. 2, f. 5. 1966.

Herbs. Leaves ovate-lanceolate, apex acute or acuminate, narrowed at base. Racemes 6–8-flowered; dorsal sepal broader than long, c 0.7 x 0.8 cm; lateral sepal c 0.9 x 0.6 cm; lower segment of petals 0.5–0.7 x 0.05 cm.

*Illus.* : Sant. & Kap. *op.cit.*

*Distrib.* : Amaravati; Bombay; Pune; Ratnagiri.

var. *gibsonii* (Hook.f.) Bennet in J. Econ. Tax. Bot. 5: 452. 1984. *H. gibsonii* Hook. f. Fl. Brit. India 6: 135. 1890; Sant & Kap. Orch. Bombay 12, t. 2, f. 3–4. 1966.

Herbs, 15–45 cm high. Tuber usually one, somewhat cylindrical, c 2.5 cm in diam. Leaves 3.5–15.0 x 1.5–3.5 cm, alternate, pentastichous, ovate to oblong-lanceolate, apex acute or rarely subacuminate, margins wavy. Inflorescence 5–15 cm long, lax, secund or subsecund. Flowers white, bracteate, stalked. Capsules ellipsoid, shortly beaked.

*Fls. & Frts.* : July–September.

*Illus.* : Sant. & Kap. *op.cit.*

*Distrib.* : Ahmednagar; Akola; Kolhapur; Pune; Raigad; Ratnagiri; Satara; Thane.

*H. furcifera* Lindl. Gen. Sp. Orchid. 319. 1835; Hook. f. Fl. Brit. India 6:149. 1890; Balakr. in Bull. Bot. Surv. India 6:91. (1964) 1965; Sant. & Kap. Orch. Bombay 39, t. 5, f. 20. 1966.

Herbs, 40–60 cm high. Tubers 1–2, c 3.0 x 1.5 cm, ovate-ellipsoid. Leaves 13–17 x 3–6 cm, oblanceolate or obovate or elliptic, apex acute or subacuminate. Inflorescence 25–40 cm long, stout, erect, lax, many-flowered; scape bracteate. Flowers small, green, shortly pedicelled, bracteate. Capsules c 1.5 x 0.55 cm, fusiform, turgid, decurved, ribs strong, beak of capsule one-fourth as long.

*Fls. & Frts.* : August–November.

*Illus.* : Sant. *et al.* in J. Bombay nat. Hist. Soc. 55: 483, t. 4. 1958; Sant. & Kap. *op. cit.*; Joseph in Rec. Bot. Surv. India 22:60, f. 43a–43c. 1982.

*Distrib.* : Rare. Ahmednagar; Nasik; Sindhudurg.

*Note* : Kamble (J. Econ. Tax. Bot. 16: 558. 1992) reported this as addition to Orchids of Maharashtra from Ahmednagar, although this was reported from Nasik earlier (Lakshminarasimhan & Sharma, Fl. Nasik Dt. 451. 1991).

**H. grandifloriformis** Blatt. & McC. in J. Bombay nat. Hist. Soc. 36:17. 1932 *emend.* Sant. & Kap. *Ibid.* 56: 195. 1959 & Orch. Bombay 17, t. 1, f. 2–2' 1966. *H. grandiflora* Lindl. ex Dalz. & Gibs. Bombay Fl. 267. 1861 *non* Torr. ex Beck. 1823; Hook. f. Fl. Brit. India 6: 136. 1890; Cooke, Fl. Pres. Bombay 3: 221. 1958 (Repr. ed.). *H. grandifloriformis* var. *aequiloba* Blatt. & McC. *op. cit.* 18. 'Chickurkanda'.

Herbs, 10–16 cm high; tubers 1–2, 1.8–3.0 x 0.8–2.0 cm, globose or ellipsoid. Leaves 1–2, opposite, 2–9 x 1.5–8.5 cm, broadly ovate to suborbicular, rarely oblong-lanceolate, acute or obtuse, entire. Scapes 5–20 cm long, erect. Flowers white, pedicellate, bracteate, in one-to several-flowered racemes. Capsules 2.0–2.8 x 5.0 cm, strongly ribbed.

*Fls. & Frts.* : June–November.

*Illus.* : Sant. & Kap. *op. cit.*

*Distrib.* : Akola; Amaravati; Bombay; Kolhapur; Nasik; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

**H. heyneana** Lindl. Gen. Sp. Orchid. 320. 1835; Hook. f. Fl. Brit. India 6: 148. 1890; Cooke, Fl. Pres. Bombay 3: 225. 1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 32, t. 5, f. 15–16. 1966. *H. subpubens* A. Rich. in Ann. Sci. Nat. 2, 15:75, t. 4C. 1841; Hook. f. *op. cit.*; Cooke, *op. cit.* *H. cerea* Blatt. & McC. in J. Bombay nat. Hist. Soc. 36: 21, t. 6. 1932. *H. cerea* var. *polyantha* Blatt. & McC. *op. cit.* 22.

Herbs, 8–45 cm tall; tubers 1 or 2, ovoid or oblong-ovoid. Leaves 1–7 x 0.5–2.0 cm, narrowly oblong-lanceolate to lanceolate, rarely ovate, acute, often mucronulate. Inflorescence 2–14 cm long, lax, secund or subsecund. Flowers bracteate, shortly pedicellate, greenish-white. Capsules ellipsoid or oblong.

*Fls. & Frts.* : August–November.

*Illus.* : Wight, Ic. t. 923. 1845; Fyson, Fl. Nilgiri Pulney Hill tops 3: t. 523. 1920 (Repr. ed. 1975); Blatt. & McC. *op. cit.*; Sant. & Kap. *op. cit.*

*Distrib.* : Kolhapur; Nasik; Pune; Raigad; Ratnagiri; Satara; Sindhudurg.

**H. hollandiana** Sant. Fl. Purandhar 126. 1958; Sant. & Kap. Orch. Bombay 40. 1966. *H. affinis* Wight, Ic. t. 1707. 1852 non D. Don, 1825; Hook. f. Fl. Brit. India 6: 149. 1890; Cooke, Fl. Pres. Bombay 3: 225. 1958 (Repr. ed.).

Tubers 2, c 3 x 1 cm, oblong-ovoid to ellipsoid. Leaves 2-12 x 0.5-3.5 cm, obovate, broadly oblanceolate or oblanceolate-elliptic, acute, minutely papillate on margins. Peduncle c 23 cm long, bracteate. Racemes 8-22 cm long, dense. Flowers c 1.6 cm long, bracteate, shortly pedicellate. Capsules 1.0-1.4 x 0.3-0.4 cm, fusiform, tapering above into a narrow, 0.2-0.4 cm long beak.

*Fls. & Frts.* : November-December.

*Illus.* : Wight, *op. cit.*

*Distrib.* : Amaravati; Pune.

**H. longicorniculata** Grah. Cat. Bombay Pl. 202. 1839; Sant. & Kap. Orch. Bombay 29, t. 1, f. 1-1. 1966. *H. longecalcarata* A Rich. in Ann. Sci. Nat. 2, 15:71, t. 3B. 1841; Hook. f. Fl. Brit. India 6:141. 1890; Cooke, Fl. Pres. Bombay 3: 223. 1958 (Repr. ed.). *H. longecalcarata* var. *viridis* Blatt. & McC. in J. Bombay nat. Hist. Soc. 36:20. 1932.

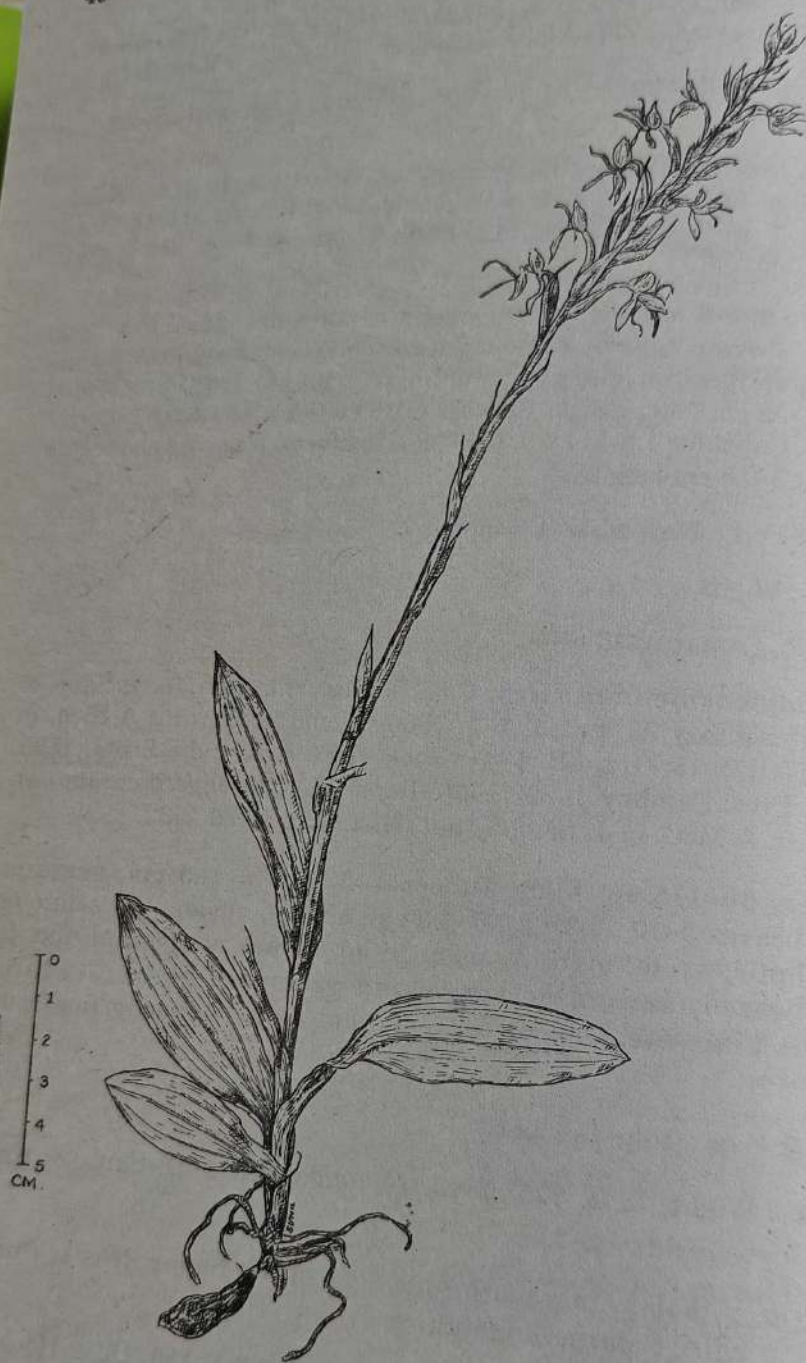
Herbs, 30-115 cm high. Tubers 1-2, 3-6 x 1-3 cm, ovate or ellipsoid. Leaves 3-10, 3-23 x 1.5-4.0 cm, oblong, oblong-lanceolate or oblong-elliptic, acute, margins pale. Inflorescence of terminal, few to many-flowered, secund or subsecund racemes. Flowers white, pedicellate, bracteate. Capsules 2.5-3.0 cm long, narrowly fusiform, beaked.

*Fls. & Frts.* : July-October.

*Illus.* : Wight, Ic. t. 925. 1845 (*H. longecalcarata*); Sant. & Kap. *op. cit.*

*Distrib.* : Akola; Amaravati; Aurangabad; Kolhapur; Nasik; Pune; Raigad; Ratnagiri; Satara; Sindhudurg.

**H. marginata** Coleb. in Hook. Exot. Fl. 2, 17: t. 136. 1824; Hook. f. Fl. Brit. India 6: 150. 1890; Cooke, Fl. Pres. Bombay 3: 226. 1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 33, t. 5, f. 17. 1966.



*Habenaria marginata* Coleb.  
var. *flavescens* (Hook. f.) T. Cooke

1. Flowers numerous; ovary obscurely beaked
  1. Flowers few; ovary distinctly beaked
- ... var. *marginata*  
... var. *flavescens*

**var. *marginata*.**

Herbs, 8–36 cm high; tubers 1–2, ovoid or ellipsoid. Leaves 2–5, 3–9 x 1.5–3.0 cm, oblong, oblong-elliptic or ovate to ovate-lanceolate, acute, obtuse or mucronulate. Inflorescence 4–26 cm long, spicate, lax or dense. Flowers greenish-yellow, sessile, bracteate. Capsules fusiform, turgid, curved.

*Fls. & Frts.* : July–November.

*Illus.* : Sant. *op.cit.*; Ugemuge, Fl. Nagpur Dt. t. 156. 1986.

*Distrib.* : Bhandara; Bombay; Chandrapur; Kolhapur; Nagpur; Osmanabad; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

**var. *flavescens*** (Hook. f.) T. Cooke, Fl. Pres. Bombay 2:721. 1907 [3: 226. 1958 (Repr. ed.)]. *H. flavescens* Hook. f. Fl. Brit. India 6: 150. 1890. *H. marginata* f. *flavescens* Blatt. & McC. in J. Bombay nat. Hist. Soc. 36: 24. 1932; Sant. & Kap. Orch. Bombay 34. 1966.

A more slender plant

*Distrib.* : Konkan (Cooke, *op.cit.*).

***H. multicaudata*** Sedgew. in Rec. Bot. Surv. India 6: 352. 1919; Blatt. & McC. in J. Bombay nat. Hist. Soc. 36: 16. 1932; Sant. & Kap. Orch. Bombay 14, t. 2, f. 6. 1966; Nayar & Kochhar in J. Econ. Tax. Bot. 5: 920. 1984.

Herbs, 30–65 cm high; stems with appressed sheaths in lower part. Leaves 4–15 x 1.5–4.0 cm, elliptic-oblong, apex subacuminate or acute. Racemes 10–15 cm long, lax, shortly pedunculate, bracteate. Flowers pedicellate, bracteate, pale brownish-green; spur c 1 cm long.

*Fls.* : August–September.

*Illus.* : Sant. & Kap. *op.cit.*; Joseph in Rec. Bot. Surv. India 22: 57, f. 40a–40b. 1982.

*Distrib.* : Rare as undergrowth in dense forest. Akola; Satara.

*Notes* : Nayar & Kochhar (*op.cit.*) have reported this for the first time from Maharashtra. Earlier it was reported from N. Kanara, Nilgiri and Anamalai hills, Tamilnadu.

***H. ovalifolia*** Wight, Ic. t. 1708. 1851; Hook. f. Fl. Brit. India 6: 149. 1890; Sant. & Kap. Orch. Bombay 37, t. 5, f. 18. 1966. *H. modesta*

Dalz. in Hook. Kew. J. Bot. 2: 262. 1850; Hook. f. *op.cit.* 166. *H. hallbergii* Blatt. & McC. in J. Bombay nat. Hist. Soc. 36: 24. 1932.

Herbs, 18–90 cm high; tubers 1–2, 2–4 x 1.2 cm, irregularly ellipsoid. Leaves 4–6, 5–18 x 1.5–7.0 cm, oblong, oblong-lanceolate or obovate to oblanceolate, acute, entire. Inflorescence 12–40 cm long of lax, many-flowered racemes. Flowers dull green, bracteate, shortly pedicellate. Capsules c 1.5 x 0.3 cm, broadly fusiform, strongly ribbed, beak minute.

*Fls. & Frts.* : August–November.

*Illus.* : Wight, *op.cit.*; Sant & Kap. *op.cit.*

*Distrib.* : Rare. Bombay; Pune; Sindhudurg.

***H. panchganiensis*** Sant. & Kap. in J. Bombay nat. Hist. Soc. 54: 478. 1957 & Orch. Bombay 27, t. 6, f. 24. 1966. *H. variabilis* Blatt. & McC. in J. Bombay nat. Hist. Soc. 36: 19, tt. 4 & 5. 1932 *non* Ridl. 1886.

Herbs, 10–22 cm high; tubers 1–2, 1.0–2.5 x 0.8–1.5 cm, oblong or ellipsoid. Leaves 3–5, 2–8 x 0.8–2.5 cm, oblong, oblong-lanceolate or elliptic, acute, entire, minutely papillate. Inflorescence 4–15 cm long, 2- to several-flowered, secund or subsecund in dense or lax racemes. Flowers white, pedicellate, bracteate. Capsules c 2.5 x 0.6 cm, spindle-shaped, beak 0.3–0.5 cm long, ribs 6, strong.

*Fls. & Frts.* : July–September.

*Illus.* : Blatt. & McC. *op.cit.*; Sant. & Kap. *op.cit.*

*Distrib.* : Ratnagiri; Satara; Sindhudurg.

***H. plantaginea*** Lindl. Gen. Sp. Orchid. 323. 1835; Hook. f. Fl. Brit. India 6: 141. 1890; Cooke, Fl. Pres. Bombay 3: 224. 1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 28, t. 6, f. 25. 1966; Jayaweera in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 2: 355, f. 157. 1981.

Herbs, 10–40 cm tall; tubers 2, unequal, suborbicular to ellipsoid. Leaves 3–5, uppermost usually small and bract-like, 2–13 x 0.5–3.5 cm, oblong or oblong-lanceolate, acute, entire, minutely papillate. Inflorescence 8–30 cm long, lax, of few-many-flowered secund or subsecund racemes, terminating long peduncle. Flowers white, shortly pedicellate, bracteate. Capsules turgid, fusiform, curved, beak slender.

*Fls. & Frts.* : September–November.

*Illus.* : Wight, Ic. t. 1710. 1851; Sant. & Kap. *op. cit.*; Jayaweera in Dassan. & Fosb. *op. cit.*

*Distrib.* : Ahmednagar; Amaravati; Bhandara; Bombay; Chandrapur; Nasik; Pune; Raigad; Satara.

**H. rariflora** A. Rich. in Ann. Sci. Nat. 2, 15: 70, t. 2D. 1841; Hook. f. Fl. Brit. India 6: 136. 1890; Cooke, Fl. Pres. Bombay 3: 221. 1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 15, t. 3, f. 9-10. 1966. *H. rariflora* var. *latifolia* Blatt. & McC. in J. Bombay nat. Hist. Soc. 36: 17. 1932.

Herbs, 10-30 cm high; tubers 1-2, ovoid or oblong. Leaves 3-12 x 0.5-4.0 cm, narrowly linear-lanceolate to oblong-lanceolate, broadly oblong, ovate-elliptic or ovate. Inflorescence usually of 1-4 flowers. Flowers white, pedicellate, bracteate. Capsules 2-3 cm long, oblong, strongly ribbed, beak 0.2-0.4 cm long, stalk c 0.4 cm long.

*Fls. & Frts.* : July-November.

*Illus.* : Wight, Ic. t. 924. 1945; Fyson, Fl. Nilgiri & Pulney Hill tops 3: t. 519. 1920 (Repr. ed. 1975); Sant. & Kap. *op.cit.*; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 695. 1982.

*Distrib.* : Ahmednagar; Kolhapur; Nasik; Pune; Raigad; Satara; Sindhudurg; Thane.

**H. roxburghii** Nicols. in Sald. & Nicols. Fl. Hassan Dt. 834. 1976. *H. platyphylla* Spr. Syst. Veg. 3: 690. 1826; Hook. f. Fl. Brit. India 6: 140. 1890; Cooke, Fl. Pres. Bombay 3: 222. 1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 19. 1966.

Herbs, c 45 cm high; roots tuberous. Leaves c 10 x 10 cm, fleshy, sessile, broadly ovate to suborbicular, apex acute. Flowers white, in dense many-flowered spikes, 6-10 cm long; bracts lanceolate. Capsules c 2 cm long, strongly ribbed, beaked.

*Fls. & Frts.* : July-October.

*Illus.* : Wight, Ic. t. 1709. 1851 (*H. platyphylla*).

*Distrib.* : Amaravati; Konkan (Cooke, *op.cit.*); Osmanabad; Yavatmál.

*Notes* : This species was originally named as *Orchis plantaginea* Roxb. Pl. Cor. 1: 32, t. 37. 1795. It could not be transferred to *Habenaria* as the epithet was preoccupied by that of Lindley's *Habenaria plantaginea* (1835). The other epithets proposed for this plant were *Orchis platyphyllos* Willd. Sp. Pl. 4: 11.1805, *O. roxburghii* Pers. Syn. Pl. 2: 503. 1807 and *Habenaria platyphylla* Spr. Syst. Veg. 3: 690. 1826 which were all superfluous names when they were published

as they included *Orchis plantaginea* Roxb. which was a valid name. Hence Nicolson has proposed a new name for this plant.

**H. stenopetala** Lindl. Gen. Sp. Orchid. 319. 1835; Hook. f. Fl. Brit. India 6: 134. 1890; Cooke, Fl. Pres. Bombay 3: 219. 1958 (Repr. ed.); Blatt. & McC. in J. Bombay nat. Hist. Soc. 36: 14, t. 1. 1932; Sant. & Kap. Orch. Bombay 9. 1966.

Tubers 1-2, ovoid, c 3 x 2 cm. Leaves 4-14 x 1-4 cm, obovate, oblong to lanceolate, acute or shortly acuminate. Inflorescence c 14 cm long, dense, many-flowered. Flowers pale brownish-green, pedicellate, bracteate. Capsules c 1 cm long, shortly beaked, stalked.

*Fl. & Frts.* : October-December.

*Illus.* : Blatt. & McC. *op.cit.*

*Distrib.* : Bombay; Pune; Thane.

**H. suaveolens** Dalz. in Hook. Kew J. Bot. 2: 263. 1850; Hook. f. Fl. Brit. India 6: 140. 1890; Cooke, Fl. Pres. Bombay 3: 222. 1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 27. 1966.

Herbs, 15-25 cm high; tubers 2, 1.5-2.0 x 1.0 cm, ovoid or oblong-ovoid. Leaves 5, 1.5-7.0 x 1.0-3.5 cm, oblong or elliptic, acute. Scapes c 25 cm long. Spikes c 2 cm long, dense. Flowers small, white, bracteate; spur filiform, pendulous.

*Fls.* : August-September.

*Distrib.* : Sindhudurg.

**H. viridiflora** (Swartz) R. Br. Prodr. 312. 1810; Hook. f. Fl. Brit. India 6: 150. 1890; Sant. & Kap. Orch. Bombay 35, t. 5, f. 19. 1966. *Orchis viridiflora* Swartz in Act. Holm. 706. 1800. *Habenaria viridiflora* var. *dalzellii* Hook. f. *op. cit.*; Cooke, Fl. Pres. Bombay 3: 226. 1958 (Repr. ed.).

Herbs, 10-25 cm high; tubers 1-2, irregularly ellipsoid. Leaves 3-5, 4-7 x 0.6-1.0 cm, narrowly linear-oblong, mucronate, margins yellowish. Racemes 5.5-9.0 cm long. Flowers yellow, bracteate, shortly pedicellate; spur slender, acute at apex.

*Fls. & Frts.* : December-January.

*Illus.* : Wight, Ic. t. 1705. 1851; Sant. & Kap. *op.cit.*; Jayaweera in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 2: 362, f. 160. 1981.

*Distrib.* : Sindhudurg (Cooke, *op. cit.*).

**Imperfectly known species:**

**H. caranjensis** Dalz. in Hook. Kew J. Bot. 2: 262. 1850 & in Dalz. & Gibs. Bombay Fl. 267. 1861; Hook. f. Fl. Brit. India 6: 166. 1890; Cooke, Fl. Pres. Bombay 3: 228. 1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 41. 1966.

Lower leaves somewhat rounded, upper oblong-lanceolate, 3-nerved. Bracts acuminate, shorter than ovary. Flowers small, yellow; upper sepals rounded; petals ovate, obtuse; lip tripartite; middle lobe oblong, obtuse; lateral ones shorter, cuneate, truncate; spur clavate, shorter than ovary.

*Notes* : According to Cooke (*op.cit.*), the above is the description as given by Dalzell in the 'Bombay Flora.' There are no specimens in Herb. Kew and the plant does not appear to have been collected by any botanist other than Dalzell.

**LIPARIS L. C. Rich. (nom. cons.)**

**Liparis nervosa** (Thunb.) Lindl. Gen. Sp. Orchid. 26. 1830; Cooke, Fl. Pres. Bombay 3: 180. 1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 181, t. 42. 1966. *Ophrys nervosa* Thunb. Fl. Jap. 27. 1784. *Liparis bituberculata* (Hook.) Lindl. in Edw. Bot. Reg. 11: subt. 882. 1825; Hook. f. Fl. Brit. India 5: 696. 1890. *L. dalzellii* Hook. f. *op. cit.* 698. *L. odorata* (Willd.) Lindl. Gen. & Sp. Orch. 26. 1830; S.M. Almeida, Fl. Savantwadi 2:16. 1990. *L. nervosa* var. *dalzellii* (Hook. f.) T. Cooke, Fl. Pres. Bombay 2: 679. 1907 [3: 181. 1958 (Repr. ed.)].

Pseudobulbs 0.5–1.0 cm in diam., whitish. Stems erect, 3–13 cm tall, 1–2-sheathed. Leaves 2, rarely 3, 4–15 x 1–5 cm, elliptic, oblong-elliptic or oblong-lanceolate, acute, entire. Inflorescence 10–20 cm long, erect, lax. Flowers long-pedicelled, pale yellow or yellow tinged with pale purple on lip, bracteate.

*Fls. & Frts.* : July–September.

*Illus.* : Sant. & Kap. *op. cit.*; Jayaweera in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 2: 57, f. 25. 1981.

*Distrib.* : Scarce along shady places in edges of forest. Pune; Sindhudurg.

**LOXOMA Garay**

**Loxoma maculata** (Dalz.) Garay in Bot. Mus. Leaf. Harv. Univ. 23: 184. 1972. *Micropera maculata* Dalz. in Hook. J. Bot. 3: 281. 1851.

*Sarcochilus maculatus* (Dalz.) Pfitz. Vergl. Morph. Orch. 15. 1881; Cooke, Fl. Pres. Bombay 3: 201. 1958 (Repr. ed.). *Saccolabium maculatum* (Dalz.) Hook. f. Fl. Brit. India 6: 64. 1890. *Gastrochilus maculatus* (Dalz.) O. Ktze. Rev. Gen. Pl. 2: 661. 1891; Sant. & Kap. Orch. Bombay 227. 1966.

Stem c 1 cm long. Leaves 2-3, sheathing at base, 4-8 x 1.7-2.3 cm, narrowly oblong, tapering towards plicate base, entire, emarginate with unequal lobes. Inflorescence c twice as long as leaves, several-flowered, arising from base of leaves, often 2 per plant. Flowers c 0.8 x 1.0 cm, sessile, bracteate, yellow or yellow tinged with purple.

Fls. : May.

Illus. : Sald. in Sald. & Nicols. Fl. Hassan Dt. 851, f. 131. 1976 [*Smithsonia maculata* (Dalz.) Sald. in J. Bombay nat. Hist. Soc. 71: 74. 1974].

Distrib. : Pune; Sindhudurg (Cooke, *op. cit.*).

#### LUISIA Gaud.

1. Petals much longer than sepals; lip panduriform, tip with 2 divergent lobules
1. Petals not as above; lip with broadly obcordate, short, terminal lobes

... *L. birchea*

... *L. zeylanica*

*Luisia birchea* Bl. Rumph. 4: 50. 1849; Seid. in Dansk. Bot. Ark. 27:35. 1971. *L. tenuifolia sensu* Hook. f. Fl. Brit. India 6:24. 1890 non (L) Bl. 1848; Cooke, Fl. Pres. Bombay 3: 205. 1958 (Repr. ed.). *L. pseudotenuifolia* Blatt. & McC. in J. Bombay nat. Hist. Soc. 35: 492. 1932. *L. evangelinae* Blatt. & McC. *op.cit.* 493, t. 11. *L. tenuifolia* var. *evangelinae* (Blatt. & McC.) Sant. & Kap. *Ibid.* 59: 829. 1962 & Orch. Bombay 214. 1966. *L. birchea* var. *evangelinae* (Blatt. & McC.) Sarkar in J. Econ. Tax. Bot. 5: 1008. 1984.

Stems brownish-green. Leaves up to 25.0 x 0.2 cm, terete, caudate at apex. Peduncles short, stout, sheathed. Flowers c 1.8 cm long, fleshy, pedicellate, bracteate. Capsules c 3.0 x 0.5 cm, purplish, fusiform, pedicelled.

Fls. & Frts. : March-April.

Illus. : Blatt. & McC. *op.cit.*; Jayaweera in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 2: 213, f. 94. 1981 (*L. tenuifolia*).

Distrib. : Rare along ghats at an altitude of c 1000 m. Konkan (Cooke, *op. cit.*); Satara.

*L. zeylanica* Lindl. Fol. Orchid. 3. 1853; Seid. in Dansk. Bot. Ark. 27(4): 62. 1971. *L. teretifolia sensu* Hook. f. Fl. Brit. India 6: 22. 1890 non Gaud. 1829; Cooke, Fl. Pres. Bombay 3: 205. 1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 213. 1966. *L. truncata* Blatt. & McC. in J. Bombay nat. Hist. Soc. 35: 491. 1932.

Stems up to 40 cm long. Leaves 2.5–12.0 x 0.3–0.5 cm, thick, falcate, apex rounded or acute. Inflorescence 2- to 4- flowered, extra-axillary. Flowers 0.3–0.4 cm across, drooping, fleshy, shortly pedicellate, bracteate. Capsules 1.8–2.0 x 0.3–0.5 cm, narrowly spindle-shaped, tapering towards base, strongly ribbed.

*Fls. & Frts.* : May–June.

*Illus.* : Wight, Ic. t. 911. 1845 (*Cymbidium triste*); Wight, *op. cit.* t. 1689. 1851 (*L. teretifolium*); Jayaweera in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 2: 211, f. 93. 1981 (*L. teretifolia*).

*Distrib.* : Rare epiphytic herb. Nasik; Sindhudurg.

MALAXIS Soland. ex Swartz

*Malaxis rheedii* Swartz in Kongl. Vet. Acad. Nya Handl. 21: 235. 1800; Nair & Ansari in Taxon 30: 475. 1981. *Microstylis versicolor* Lindl. Gen. Sp. Orchid. 21. 1830 non Wight 1844–45; Cooke, Fl. Pres. Bombay 3: 179. 1958 (Repr. ed.). *Malaxis versicolor* (Lindl.) Abeywickr. in Ceylon J. Sci. (Biol. Sci.) 2: 147. 1959; Sant. & Kap. Orch. Bombay 141, t. 33. 1966; Jayaweera in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 2: 45, f. 19. 1981. *Microstylis rheedii* (Swartz) Wight, Ic. t. 902. 1944; Hook. f. Fl. Brit. India 5: 690. 1890.

Stems erect, 3–25 cm tall, sheathed. Leaves 3–5, petiolate, sheathed, 5–18 x 2.5–11.0 cm, ovate-lanceolate, broadly ovate or elliptic-lanceolate, acute, margins slightly denticulate. Inflorescence 8–35 cm long, dense or lax. Flowers c 0.4 x 0.4 cm, yellow with a pale purple tinge when young, becoming reddish-purple at length. Capsules c 1.0 x 0.6 cm, obovoid, pyriform.

*Fls. & Frts.* : July–March.

*Illus.* : Wight, *op. cit.*; Sant. & Kap. *op. cit.*; Jayaweera in Dassan. & Fosb. *op. cit.*; Matthew, *Illus. Fl. Tamilnadu Carnatic* 2: t. 707. 1982.

*Distrib.* : Amaravati; Kolhapur; Pune, Raigad; Ratnagiri; Satara; Sindhudurg.

## NERVILIA Commers. ex. Gaud. (nom. cons.)

- |  |     |                            |
|--|-----|----------------------------|
| 1. Flowers racemose                          | ... | <i>N. aragoana</i>         |
| 1. Flowers 1-3:                              |     |                            |
| 2. Bracts conical                            | ... | <i>N. pratinara</i>        |
| 2. Bracts not as above:                      |     |                            |
| 3. Leaves glabrous; midlobe rounded at apex  | ... | <i>N. infundibulifolia</i> |
| 3. Leaves hairy; midlobe emarginate, crisped | ... | <i>N. plicata</i>          |

*Nervilia aragoana* Gaud. in Freyc. Voy. Bot. 422, t. 35. 1829; Sant. & Kap. Orch. Bombay 134. 1966. *Pogonia flabelliformis* Lindl. Gen. Sp. Orchid. 415. 1840; Hook. f. Fl. Brit. India 6: 121. 1890. *P. carinata* (Roxb.) Lindl. op. cit. 414; Hook. f. op. cit.; Cooke, Fl. Pres. Bombay 3: 211. 1958 (Repr. ed.). *Nervilia carinata* (Roxb.) Schltr. in Bot. Jahrb. 45:406. 1911. *Duduki*.

Tubers 1.5-2.0 cm in diam., subglobose, white. Leaf appearing after flowers, petiolate, 9-12 x 8-11 cm, cordate, broadly ovate to almost orbicular, acute, acuminate or apiculate, nerves up to 18. Scapes 10-25 cm long, 2-sheathed. Racemes lax. Flowers drooping, green, shortly stalked, 2.0-2.5 cm long. Capsules c 0.5 cm long, pendulous.

*Fls. & Frts.* : May-September.

*Illus.* : Wight, Ic. t. 172. 1851 (*Pogonia carinata*); Joseph in Rec. Bot. Surv. India 22: 21, f. 10a-10d. 1982.

*Distrib.* : Akola; Amaravati; Bombay; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane; Yavatmal.

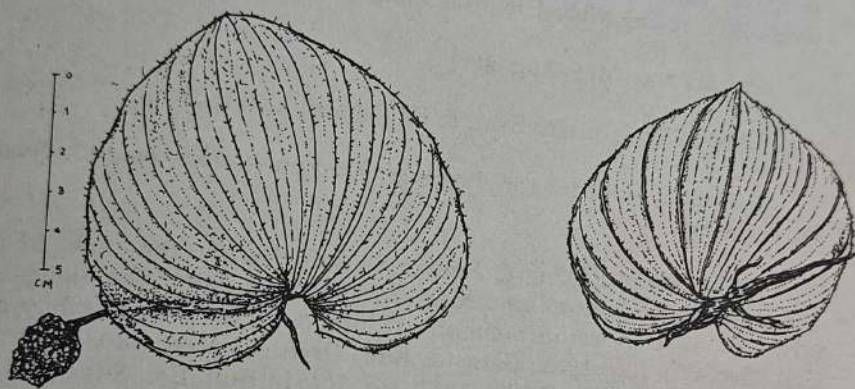
*N. infundibulifolia* Blatt. & McC. in J. Bombay nat. Hist. Soc. 35: 725, t. 3. 1932; Sant. & Kap. Orch. Bombay 127, t. 31. 1966. *N. hallbergii* Blatt. & McC. op.cit. 726.

Tubers 0.6-1.2 cm in diam., subspherical, sparsely covered with small root-knobs. Leaves sheathed, petioled, 2-3 x 3-4 cm, broadly ovate, cordate to suborbicular, subacute, obtuse or slightly retuse at apex, margins irregularly and minutely dentate-crenulate, nerves usually 5-7. Inflorescence 1-flowered; scapes 6-15 cm long. Flowers greenish-purple. Capsules c 1.8 x 0.6 cm, ellipsoid, maroon.

*Fls. & Frts.* : May-June.

*Illus.* : Blatt. & McC. op. cit.; Sant. & Kap. op.cit.

*Distrib.* : Pune; Raigad.



*Nervilia plicata* (Andr.) Schltr.

*N. plicata* (Andr.) Schltr. in Engl. Bot. Jahrb. 45: 403. 1911; Sant. & Kap. Orch. Bombay 137. 1966. *Arethusa plicata* Andr. Bot. Repos. t. 321. 1802. *Pogonia plicata* (Andr.) Lindl. Gen. Sp. Orchid. 415. 1840; Hook. f. Fl. Brit. India 6: 119. 1890; Cooke, Fl. Pres. Bombay 3: 211. 1958 (Repr. ed.). *P. biflora* Wight, Ic. t. 1758. 1851; Hook. f. *op. cit.* *Nervilia discolor* (Bl.) Schltr. *op. cit.*; Sant. & Kap. *op. cit.* 131. 'Dudri', 'Dukar-kanth'.

Herbs, tuberous; tubers globose, 1-2 cm in diam., white. Leaves solitary, lying flat on ground, 4-16 x 5-16 cm, broadly ovate or suborbicular, obtuse-acute or shortly acuminate at apex, 13-nerved, purplish. Inflorescence of 2-3-flowered racemes. Capsules 1.0-1.6 x 0.6-0.8 cm, oblong, ribbed, winged along ribs.

*Fls. & Frts.* : May-August.

*Illus.* : Wight, *op. cit.*; Sant. & Kap. *op. cit.* 133, t. 32.

*Distrib.* : Ahmednagar; Bombay; Konkan (Cooke, *op. cit.*); Nasik; Pune; Satara.

*N. prainiana* (King & Pantl.) Seid. in Dansk. Bot. Ark. 32 (2): 149. 1978. *Pogonia prainiana* King & Pantl. in J. Asiat. Soc. Bengal 65 (2) : 129. 1896. *Nervilia monantha* Blatt. & McC. in J. Bombay nat. Hist. Soc. 35: 724. 1932; Sant. & Kap. Orch. Bombay 130. 1966. *N. crispata auct. non* (Bl.) Schltr. 1911; A.S. Rao in Bull. Bot. Surv. India 5: 63, t. 1. 1963.

Herbs, 8-10 cm high; tubers brown, warty, subglobose, 1-2 cm in diam. Leaves appearing after flowering, 0.5-8.0 cm broad, subreniform, hairy above, glabrous below, up to 12-nerved. Scapes 1-flowered. Flowers pale green, often tinged with pink; labellum trumpet shaped, 3-lobed.

*Fls.* : August-September.

*Illus.* : King & Pantl. in Ann. Roy. Bot. Gard. Calcutta 8: 267, t. 355. 1898; A.S. Rao, *op. cit.*; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 700. 1982.

*Distrib.* : A few in crests of ghats. Kolhapur; Ratnagiri (S.M. Almeida, 1983-86).

OBERONIA Lindl. (*nom. cons.*)

1. Sidelobes or all lobes of lip deeply toothed or laciniate ... *O. iridifolia*  
var. *denticulata*
1. Lip entire or 3-lobed, margins entire or crose, never pectinate :
  2. Petals linear :
    3. Lip longer than broad; lateral lobes broad, wing-like; midlobe short, quadrate, 3-lobed margin ... *O. platycaulon*
    3. Lip oblong-orbicular; apex 2-lobulate, lobules orbicular ... *O. brunoniana*
  2. Petals broadly elliptic-oblong or ovate :
    4. Lip deeply 3-lobed; sidelobes broad or long, midlobe obcordate or 2-fid ... *O. recurva*
    4. Lip oblong or obcordate, longer than sepals; sidelobes undeveloped or minute, midlobes 2-fid :
      5. Lip broader across sidelobes than across midlobe which is entire, 2-lobulate ... *O. falconeri*
      5. Midlobe broader than lip across sidelobes; midlobe divided at apex into 2 truncate lobules ... *O. verticillata*

**Oberonia brunoniana** Wight, Ic. t. 1622. 1851; Hook. f. Fl. Brit. India 5: 681. 1888; Cooke, Fl. Pres. Bombay 3: 178. 1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 69, t. 15, Ab. 1966.

Herbs, erect or pendulous. Leaves 4-15 x 1.0-3.5 cm, succulent, obovate to linear-oblong, often subfalcate, acute. Scapes 1.5-3.0 cm long, 2-angled, furnished with a small leaf-like bract at apex just below inflorescence. Spikes 5-20 x 0.5-0.6 cm, erect or recurved, stiff. Flowers densely imbricate, brown, bracteate, subsessile, c 0.2 cm across. Capsules c 0.5 x 0.3 cm, ellipsoid, stalk short.

*Fls. & Frts.* : February-March.

*Illus.* : Wight, *op. cit.*; Sant. & Kap. *op. cit.*; Joseph in Rec. Bot. Surv. India 22: 86, fig. 69a-69c. 1982.

*Distrib.* : Kolhapur; Satara; Thane.

**O. falconeri** Hook. f. in Hook. Ic. Pl. t. 1780. 1888 & Fl. Brit. India 5: 678. 1888; Cooke, Fl. Pres. Bombay 3: 178. 1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 65, t. 11 A-B. 1966.

Herbs, erect or pendulous. Leaves 2-9 x 0.5 cm, coriaceous, oblong-lanceolate, subfalcate, acute or subacuminate. Scapes short. Inflorescence 2-14 cm long, erect or curved, many-flowered, lax. Flowers spiral to subverticillate c 0.15 cm across, greenish-yellow,

bracteate, shortly pedicellate. Capsules c 0.4 x 0.2 cm, obovoid, strongly ribbed, shortly stalked.

*Fls. & Frts.* : September–December.

*Illus.* : Sant. & Kap. *op.cit.*

*Distrib.* : Amaravati; Thane.

***O. iridifolia*** Lindl. var. *denticulata* (Wight) Hook. f. *Fl. Brit. India* 5: 676. 1888; Sant. & Kap. *Orch. Bombay* 58, t. 12. 1966. *O. denticulata* Wight, *Ic.* t. 1625. 1851.

Herbs, erect or occasionally pendulous. Leaves 4–15 x 1.5–2.5 cm, fleshy, broadly ensiform, ovate-oblong to oblong-lanceolate, often subfalcate, acute to subacuminate. Scapes 2–5 cm long, bracteate. Inflorescence 7–20 cm long, dense. Flowers 0.2 cm across, imbricate in subverticils, golden yellow, bracteate, sessile. Capsules c 0.5 x 0.2 cm, sessile, broadly ovoid.

*Fls. & Frts.* : August–December.

*Illus.* : Wight, *op.cit.*; Sant. *et al.* in *J. Bombay nat. Hist. Soc.* 55: 482, t. 3. 1958; Sant. & Kap. *op.cit.*

*Distrib.* : Bombay; Thane.

***O. platycaulon*** Wight, *Ic.* t. 1623. 1852; Hook. f. *Fl. Brit. India* 5: 682. 1888; Cooke, *Fl. Pres. Bombay* 3: 179. 1958 (Repr. ed.); Blatt. & McC. in *J. Bombay nat. Hist. Soc.* 35: 257. 1931; Sant. & Kap. *Orch. Bombay* 70, t. 15, A–B. 1966.

Leaves 2–8 x 1–2 cm, ensiform, fleshy, oblong-lanceolate, acute. Scapes arising from central leaf, terete, bracteate. Spikes c 7 cm long, somewhat curved. Flowers c 0.35 x 0.2 cm, sessile, bracteate.

*Illus.* : Sant. & Kap. *op. cit.*

*Notes* : Sant. & Kap. (*op.cit.*) are of the view that this species is not definitely found to occur in Maharashtra. Hook f. (*op. cit.*) cites 'W. Ghats from the Konkan southwards'. Cooke (*op.cit.*) has included it as a doubtful species. Blatt. & McC. (*op.cit.*) include it again on the authority of Hook. f. We have not seen any specimens from this State.

***O. recurva*** Lindl. in *Edw. Bot. Reg. Misc. No. 8.* 1839; Hook. f. *Fl. Brit. India* 5: 680. 1888; Cooke, *Fl. Pres. Bombay* 3: 178. 1958 (Repr. ed.); Sant. & Kap. *Orch. Bombay* 60. 1966. *O. lingmalensis* Blatt. & McC. in *J. Bombay nat. Hist. Soc.* 35: 255. 1931. *O. recurva* var.

*lingmalensis* (Blatt. & McC.) Sant. & Kap. in J. Bombay nat. Hist. Soc. 57: 259. 1960 & Orch. Bombay 62. 1966.

Herbs, pendulous. Leaves 0.5–5.0 x 0.3–1.7 cm, ovate to lanceolate, acute to acuminate. Racemes 1.0–11.5 cm long, straight or recurved, usually dense. Flowers 0.15–2.0 cm across, imbricating, bracteate, pale orange to deep brick-red, pedicellate. Capsules 0.2–0.5 x 0.2 cm, subrotund to obovoid-oblong, pedicelled.

Fls. & Frts. : September – July.

Illus. : Jayaweera in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 2:25, f. 8.1981.

Distrib. : Kolhapur; Pune; Satara; Sindhudurg; Thane.

*O. verticillata* Wight, Ic. t. 1626. 1852; Hook. f. Fl. Brit. India 5: 677. 1888; Sant. & Kap. Orch. Bombay 66, t. 14, A–B. 1966; Shah and Badrinath in J. Econ. Tax. Bot. 6: 136. 1985. *O. verticillata* var. *longibracteata* Blatt. & McC. in J. Bombay nat. Hist. Soc. 35: 255. 1931. *O. spiralis* Blatt. & McC. *op.cit.* 256 non Griff. 1851 nec. Lindl. 1852.

Herbs, pendulous. Leaves 3–20 x 0.7–1.5 cm, oblong, narrowly ensiform, apex acuminate, fleshy. Peduncle c 3 cm long, bracteate at base. Inflorescence up to 25 cm long, falcately curved or nearly straight. Flowers in distinct verticils or spirals, shortly pedicelled, bracteate, yellow.

Fls. & Frts. : July – October.

Illus. : Wight, *op. cit.*; Sant. & Kap. *op. cit.*; Joseph in Rec. Bot. Surv. India 22: 89, f. 71a–71c. 1982.

Distrib. : Thane (Shah & Badrinath, *op. cit.*).

#### PECTEILIS Rafin.

*Pecteilis gigantea* (J.E.Sm.) Rafin. Fl. Tell. 2: 38. 1837; Joseph & Rao in Bull. Bot. Surv. India 23: 166. (1981) 1983. *Orchis gigantea* J.E. Sm. Exot. Bot. 2: 79, t. 100. 1805. *Habenaria susannae* auct. pl. non (L.) R.Br. 1810; Hook. f. Fl. Brit. India 6: 137. 1890, p.p. *Platanthera susannae* auct. pl. non (L.) Lindl. 1835; Cooke, Fl. Pres. Bombay 3: 217.1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 42, t. 7. 1966. 'Wagchora'.

Herbs, 60–120 cm high; tubers 2, ellipsoid or ovoid. Leaves 5–18 x 2–7 cm, ovate-oblong to oblong-lanceolate, acute, often with a sharp black apex, entire. Inflorescence terminal, in 2–6-flowered racemes,

16–20 cm long. Flowers  $c$  6.0 x 7.5 cm, white, faintly tinged with green, bracteate, shortly pedicellate. Capsules  $c$  4.5 x 1.7 cm, ellipsoid, strongly ribbed, beaked.

*Fls. & Frts.* : September–December.

*Illus.* : Wight, Ic. t. 920. 1845 (*Platanthera susannae*); Sant. & Kap. *op.cit.*

*Distrib.* : Kolhapur; Nasik; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

*Notes* : According to Joseph & Rao (*op.cit.*), *Pecteilis gigantea* (J.E.Sm.) Rafin. is the correct name for the Indian species while *P. susannae* (L.) Rafin. represents the species so far known "in eastern Asia from China down to northern Malaya (including Thailand) and Indonesia from Java to Amboina".

#### PERISTYLUS Bl. (*nom. cons.*)

- |  |                            |
|--|----------------------------|
| 1. Spur as long as sepals or longer (or shorter in <i>P. aristatus</i> ) :             |                            |
| 2. Leaves scattered along stem or radical :  |                            |
| 3. Leaves in whorls a little above base (radical)                                      | ... <i>P. densus</i>       |
| 3. Leaves scattered along stem :   |                            |
| 4. Mid-lobe of lip triangular, deflexed  | ... <i>P. richardianus</i> |
| 4. Mid-lobe of lip oblong, straight  | ... <i>P. gardneri</i>     |
| 2. Leaves clustered round middle of stem :   |                            |
| 5. Bracts longer than ovaries  | ... <i>P. stocksii</i>     |
| 5. Bracts shorter than ovaries   | ... <i>P. aristatus</i>    |
| 1. Spur much shorter than sepals :   |                            |
| 6. Stem leafy; leaves scattered or sub-imbricate                                       | ... <i>P. spiralis</i>     |
| 6. Leaves clustered around middle of stem :  |                            |
| 7. Lip shorter than sepals, entire or scarcely 3-lobed, lobes small, entire or rounded | ... <i>P. plantagineus</i> |
| 7. Lip as long as sepals or longer, distinctly 3-fid :                                 |                            |
| 8. Lip longer than sepals  | ... <i>P. constrictus</i>  |
| 8. Lip as long as sepals :   |                            |
| 9. Spikes dense; lateral sepals mucronate at back a little below apex                  | ... <i>P. goodyeroides</i> |
| 9. Spikes lax; lateral sepals not as above   | ... <i>P. lawii</i>        |

*Peristylus aristatus* Lindl. Gen. Sp. Orchid. 300. 1835; Sald. in Sald. & Nicols. Fl. Hassan Dt. 841. 1976. *Habenaria aristata* (Lindl.) Trim. in J. Ceylon Br. Roy. Asiat. Soc. 9: 91. 1885; Hook. f. Fl. Brit. India 6: 158. 1890.

Herbs, slender, 15–20 cm tall; stem above leaves naked. Leaves elliptic-ovate, narrowed into loose sheaths. Flowers green in slender, lax spikes; lip much longer than sepals; spur clavate.

*Fls. & Frts.* : August–September.

*Illus.* : Wight, Ic. t. 1698. 1851; Jayaweera in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 2: 371, f. 164. 1981.

*Distrib.* : Kolhapur–Satara

*P. constrictus* (Lindl.) Lindl. Gen. Sp. Orchid. 300. 1835; Mudaliar in J. Econ. Tax. Bot. 15: 469. 1991. *Herminium constrictum* Lindl. in Edw. Bot. Reg. 18: subt. 1499. 1832. *Habenaria constricta* (Lindl.) Hook. f. Fl. Brit. India 6: 161. 1890.

Terrestrials, tuberous; stem 45–60 cm high, stout. Leaves 10–15 x 3.7–10.0 cm, elliptic, apex acute or acuminate, narrowed at base or broadly petioled. Spikes dense-flowered, cylindric, 10–20 cm long. Flowers yellowish, greenish or white.

*Fls.* : June–July.

*Illus.* : King & Pantl. in Ann. Roy. Bot. Gard. Calcutta 8: 325, t. 429. 1898.

*Distrib.* : Rare. Amaravati.

*Notes* : It occurs in East and N.E. India and Himalaya. This represents an extended distribution to Maharashtra (Mudaliar, *op. cit.*).

*P. densus* (Lindl.) Sant. & Kap. in J. Bombay nat. Hist. Soc. 57: 128. 1960 & Orch. Bombay 46, t. 9, A–B. 1966. *Coeloglossum densum* Lindl. Gen. Sp. Orchid. 302. 1835. *Habenaria stenostachya* (Lindl.) Bth. Fl. Hongk. 362. 1861; Hook. f. Fl. Brit. India 6: 156. 1890. *Peristylus xanthochlorus* Blatt. & McC. in J. Bombay nat. Hist. Soc. 35: 753. 1932.

Herbs, 12–35 cm high; tuber 1, globular. Leaves 2–7 x 0.5–2.0 cm, lanceolate, oblong-lanceolate or linear-lanceolate, acute or obtuse, mucronulate, entire, margins papillate. Inflorescence in lax or dense spikes, 7–21 cm long. Flowers yellowish-white to greenish-yellow, subsecund, bracteate, sessile. Capsules c 1.0 x 0.4 cm, sessile, narrowly conical, 6-ridged.

*Fls. & Frts.* : August– October.

*Illus.* : Wight, Ic. t. 1702. 1851 (*Habenaria peristylodes*); Sant. & Kap. *op.cit.*

*Distrib.* : Ahmednagar; Kolhapur; Pune; Ratnagiri; Satara; Sindhudurg; Thane.

**P. gardneri** (Hook. f.) Kranzl. Orch. Gen. Sp. 1:506. 1898; Jayaweera in Dassan. & Fosb. 2: 376, f. 167. 1981; S.M. Almeida, Fl. Savantwadi 2: 19. 1990. *Habenaria gardneri* Hook. f. Fl. Brit. India 6: 158. 1890.

Slender, erect herbs. Leaves distantly spread all over stem, lanceolate, acute at apex. Inflorescence a terminal raceme. Flowers greenish-white; spur longer than sepals; lip trilobed; ovary pedicelled, grooved on back.

*Fls.* : September.

*Illus.* : Jayaweera in Dassan. & Fosb. *op. cit.*

*Distrib.* : Rare amidst grasses, along margins of forest on lateritic ground. Sindhudurg (S.M. Almeida, *op. cit.*).

**P. goodyeroides** (D. Don) Lindl. Gen. Sp. Orchid. 299. 1835; Blatt. & McC. in J. Bombay nat. Hist. Soc. 35: 735. 1932; Seid. & Smit. Orchid. Thailand Prelim. List. 52, f. 37. 1959; Sant. & Kap. Orch. Bombay 52. 1966. *Habenaria goodyeroides* D. Don, Prodr. Fl. Nepal. 25. 1825; Hook. f. Fl. Brit. India 6: 161. 1890. *Peristylus goodyeroides* var. *affinis* Lindl. *op.cit.* 300; Cooke, Fl. Pres. Bombay 3: 216. 1958 (Repr. ed.).

Herbs, c 37 cm high. Leaves 7–11 x 4.0–4.5 cm, broadly ovate-elliptic or elliptic, c 7-nerved, acute, margins entire, minutely papillose. Spikes erect, c 14.5 cm long. Flowers c 1 cm long, sessile, bracteate; spur saccate, ovate-globular; ovary twisted, shallowly ribbed, sessile, 0.6–0.7 cm long.

*Fls.* : August.

*Illus.* : Seid. & Smit. *op. cit.*

*Distrib.* : A few along margins of forests. Sindhudurg (S. M. Almeida, Fl. Savantwadi 2:19. 1990).

**P. lawii** Wight, Ic. t. 1695. 1851; Cooke, Fl. Pres. Bombay 3: 216. 1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 53, t. 10, C–D. 1966. *Habenaria lawii* (Wight) Hook. f. Fl. Brit. India 6: 162. 1890.

Herbs, 15–45 cm high; tubers 1–2, oblong-obovate. Stems terete, sheathed. Leaves 3–5, 3–13 x 2–4 cm, lanceolate or oblong-lanceolate, acute, entire, minutely papillose. Inflorescence 8–18 cm long. Flowers sessile, white, tinged with greenish-yellow, bracteate. Capsules 1.0–1.5 cm long, fusiform, turgid, ribbed, beaked.

*Fls. & Frts.* : July–September.

*Illus.* : Wight, *op.cit.*; Sant. & Kap. *op.cit.*

*Distrib.* : Raigad; Sindhudurg; Thane.

**P. plantagineus** Lindl. Gen. Sp. Orchid. 300. 1835; Cooke, Fl. Pres. Bombay 3: 216. 1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 51, t. 10, A–B. 1966. *Habenaria wightii* Trim. Cat. Ceyl. Pl. 91. 1885; Hook. f. Fl. Brit. India 6: 162. 1890.

Herbs, 17–88 cm high; tubers 2, oblong or ellipsoid. Stems robust, sheathed below leaves. Leaves 4–8, 7–23 x 2–9 cm, oblong, oblong-lanceolate to broadly elliptic or elliptic-ovate, acute, margins yellow, entire, minutely papillose. Spikes 9–22 cm long, erect, densely many-flowered. Flowers sessile, bracteate, pinkish-brown. Capsules c 1.0 x 0.2 cm, curved at apex.

*Fls. & Frts.* : July–December.

*Illus.* : Wight, Ic. t. 921. 1844–1845; Sant. & Kap. *op. cit.*; Jayaweera in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 2: 369, f. 163. 1981.

*Distrib.* : Bombay; Chandrapur; Kolhapur; Pune; Raigad; Ratnagiri; Sindhudurg; Thane; Yavatmal.

**P. richardianus** Wight, Ic. t. 1697. 1851; S.M. Almeida, Fl. Savantwadi 2: 20. 1990. *Habenaria bicornuta* Hook. f. Fl. Brit. India 6: 156. 1890.

Herbs, 19–34 cm high. Leaves linear-lanceolate or ovate-lanceolate, sheathing at base, acuminate at apex. Inflorescence of terminal, long spikes. Flowers greenish-yellow, bracteate; dorsal sepal oblong, 3-nerved, lateral sepals linear-lanceolate, 1-nerved; lateral petals ovate-elliptic, 2–3-nerved; lip trilobed with a concave claw.

*Fls. & Frts.* : September–October.

*Distrib.* : Rare on lateritic flats on hill tops. Sindhudurg (S.M. Almeida, *op. cit.*).

*P. spiralis* A. Rich. in Ann. Sci. Nat. 2, 15: 69, t. 2b. 1841; Cooke, Fl. Pres. Bombay 3: 215. 1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 49. 1966. *Habenaria torta* Hook. f. Fl. Brit. India 6: 159. 1890.

Stems slender, laxly sheathed. Leaves elliptic-lanceolate, acute, sheathing at base. Spikes 10-24 cm long. Flowers lax, bracteate, greenish-white.

Fls. & Frts. : July-October.

Illus. : Wight, Ic. t. 1696. 1851; Jayaweera in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 2: 375, f. 166. 1981; Joseph in Rec. Bot. Surv. India 22: 72, f. 54 a-b. 1982.

Distrib. : Konkan (Cooke, *op.cit.*).

*P. stocksii* (Hook. f.) Kranzl. Orchid. Gen. Sp. 1: 513. 1898; Cooke, Fl. Pres. Bombay 3: 215. 1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 48, t.9, C-D. 1966. *Habenaria stocksii* Hook. f. Fl. Brit. India 6: 158. 1890.

Herbs, 10-50 cm high; tubers 1-2, 1.7-3.0 x 1.2-2.0 cm, oblong or ellipsoid. Stems slender, sheathed. Leaves 5-14 x 2-4 cm, obovate-elliptic, elliptic-lanceolate or lanceolate to oblong, acute or subacuminate, margins wavy, minutely papillate. Inflorescence lax, of many-flowered, subsecund, twisted spikes, 9-24 cm long. Flowers yellowish-green, sessile, bracteate. Capsules green, slightly curved, ribbed.

Fls. & Frts. : July-October.

Illus. : Sant. & Kap. *op.cit.*

Distrib. : Ahmednagar; Amaravati; Raigad; Ratnagiri; Satara; Sindhudurg.

#### PHAIUS Lour.

*Phaius tancarvilleae* (Banks ex L'Her.) Bl. Mus. Bot. Lugd.-Bat. 2: 177. 1856 ("*tanker-villii*"); Jayaweera in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 2: 153, f. 70. 1981. *Limodorum tancarvilleae* Banks ex L' Her. Sert. Angl. 28. 1789. *Phaius wallichii* Lindl. in Wall. Pl. Asiat. Rar. 2: 46, t. 158. 1831; Hook. f. Fl. Brit. India 5: 816. 1890.

Herbs, terrestrial; stems pseudobulbous, leafy; roots vermiform. Leaves 2-4 to each pseudobulb, 3.0-11.8 x 4.5-13.5 cm, lanceolate or oblong-lanceolate, apex acuminate, strongly ribbed, veins prominent

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6 x 2 cm

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beneath, sheathing or petioled at base. Flowers purple-orange to orange-yellow, in long-peduncled, many-flowered racemes. Capsules c 6 x 2 cm, oblong.

*Fls. & Frts.* : February–November.

*Illus.* : Jayaweera in Dassan. & Fosb. *op.cit.*

*Distrib.* : Rare. Pune.

#### PHOLIDOTA Lindl. ex Hook.

**Pholidota pallida** Lindl. in Edw. Bot. Reg. subt. 1777. 1836; Sald. in Sald. & Nicols. Fl. Hassan Dt. 843. 1976. *P. imbricata* Lindl. Bot. Reg. t. 1213. 1828 *non* 1825; Hook. f. Fl. Brit. India 5: 845. 1890; Cooke, Fl. Pres. Bombay 3: 190. 1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 175, t. 40. 1966.

Pseudobulbs 2–6 x 1.5–3.0 cm, broadly ovoid-conical. Leaf solitary, from apex of pseudobulb, 12–20 x 3–6 cm, elliptic to broadly oblanceolate or oblong, entire, acute, many-nerved. Racemes synanthous, drooping. Flowers pink, arising in a closely distichous manner, pedicellate, bracteate. Capsules c 2.0 x 1.2 cm, tumid, pale-brown, shining, ovoid.

*Fls. & Frts.* : June–May.

*Illus.* : Sant. & Kap. *op.cit.*; Jayaweera in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 2: 121, f. 56. 1981; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 704. 1982.

*Distrib.* : Pune; Sindhudurg.

#### PORPAX Lindl.

- |   |                      |
|---|----------------------|
| 1. Leaves developing after flowers, obovate-elliptic or spatulate, minutely papillate, more so on margins; flowers tubular, deep red-brown, glabrous without, papillate or pilose within ...  | <i>P. reticulata</i> |
| 1. Leaves appearing with flowers, oblong-orbicular, ciliolate, tessellate; flowers 2-lipped, dirty orange-brown, densely scutellous, almost tomentose without, glabrous and smooth within ... | <i>P. jerdoniana</i> |

**Porpax jerdoniana** (Wight) Rolfe in Orchid. Rev. 16: 18. 1908; Sant. & Kap. Orch. Bombay 158. 1966. *Lichenora jerdoniana* Wight, Ic. t. 1748. 1851. *Porpax lichenora* (Lindl.) T. Cooke, Fl. Pres. Bombay 2: 689. 1907 [3: 192. 1958 (Repr. ed.)].

Pseudobulbs c 1.0 x 0.3–0.6 cm, often discoid. Leaves 2, sheathing at base, 1–2 x 1–2 cm. Flowers 2 or 3 from centre of leaves, almost sessile, bracteate. Capsules c 0.4 cm long, pedicellate, densely setulose.

*Fls. & Frts.* : June–July.

*Illus.* : Wight, *op. cit.*

*Distrib.* : Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

*P. reticulata* Lindl. in Edw. Bot. Reg. Misc. 31: 66. 1845; Cooke, Fl. Pres. Bombay 3: 192. 1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 157. 1966. *Eria reticulata* (Lindl.) Bth. in Bth. & Hook. f. Gen. Pl. 3: 509. 1883; Hook. f. Fl. Brit. India 5: 786. 1890. *Porpax papillosa* Blatt. & McC. in J. Bombay nat. Hist. Soc. 35: 268, f. 4. 1931.

Pseudobulbs c 2 cm across, whitish-green, orbicular, sheaths white lacy, reticulately nerved. Leaves 0.5–5.5 x 0.3–1.5 cm, sheathing, sessile, entire, acute or rounded with a minute blackish mucro, papillate. Flowers solitary, arising from below pseudobulb from a tube-like structure formed by young leaves and sheaths surrounding them. Capsules c 1.0 x 0.8 cm, obovoid-orbicular, pale-green, ribbed, tumid, stalked.

*Fls. & Frts.* : June–October.

*Illus.* : Wight, Ic. t. 1737. 1852 (*Aggeianthus marchantioides*); Blatt. & McC. *op. cit.*

*Distrib.* : Kolhapur; Pune; Raigad; Satara.

#### RHYNCHOSTYLIS Bl. ('*Rynchostylis*')

*Rhynchostylis retusa* (L.) Bl. Bijdr. 286, t. 49. 1825; Hook. f. Fl. Brit. India 6: 32. 1890; Cooke, Fl. Pres. Bombay 3: 202. 1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 211. 1966. *Epidendrum retusum* L. Sp. Pl. 953. 1753. *Saccolabium berkeleyi* Reichb. f. in Gard. Chron. 2, 19: 814. 1883; Hook. f. *op. cit.* 33.

Stem sheathed, stout, c 0.7 cm thick. Leaves coriaceous, channelled, up to 30 x 2 cm, apex sharply-pointed, praemorse. Racemes dense, cylindric, drooping, up to 30 cm long. Flowers pale pink with deeper-coloured spots, pedicellate, bracteate. Capsules 1.5–2.0 x 0.7–1.0 cm, obovoid-oblong, winged, reflexed; pedicels 1.2–1.5 cm long.

*Fls. & Frts.* : May–July.

*Illus.* : Wight, Ic. tt. 1745-46. 1851 (*Saccolabium rheedii*); Jayaweera in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 2: 200, f. 89. 1981.

*Distrib.* : Amaravati; Bombay; Nasik; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

SATYRIUM Swartz (*nom. cons.*)

**Satyrium nepalense** D. Don, Prodr. Fl. Nepal. 26.1825; Hook. f. Fl. Brit. India 6: 168. 1890; Jayaweera in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 2: 383, f. 170. 1981.

Herbs, terrestrial, leafy; tubers oblong; stem short, ensheathed by leaf-bases. Leaves 2 or 3, fleshy, 10-25 x 5-10 cm, elliptic or ovate-lanceolate, apex acute, base broad, sheathing, strongly ribbed beneath, 5-7-veined. Flowers pink or rarely white, c 1 cm broad, in terminal spikes, 7-9 cm in length. Capsules erect, fusiform.

*Fls. & Frts.* : September-January.

*Illus.* : Jayaweera in Dassan. & Fosb. *op.cit.*; Matthew, *Illus. Fl. Tamilnadu Carnatic* 2: t. 696. 1982.

*Distrib.* : Rare. Pune.

SPIRANTHES L. C. Rich. (*nom. cons.*)

**Spiranthes sinensis** (Pers.) Ames, Orch. 2: 53. 1908. *Neottia sinensis* Pers. Syn. Pl. 2: 511. 1807. *Spiranthes australis* (R.Br.) Lindl. in Edw. Bot. Reg. 10: t. 823. 1824; Hook. f. Fl. Brit. India 6: 102. 1890; Cooke, Fl. Pres. Bombay 3: 212. 1958 (Repr. ed.). *S. lancea* Backer & van Steenis in Blumea 6: 361. 1951, *excl. basionym*; Sant. & Kap. Orch. Bombay 160. 1966.

Herbs, 6-52 cm high, slender. Roots clustered, tuberous, up to 6 cm or more in length. Leaves broadly sheathing below, 1.5-6.0 x 0.3-1.0 cm, narrowly linear-lanceolate, oblong-lanceolate or narrowly elliptic, acute or subobtuse, entire. Spikes 3-22 cm long, secund or subsecund. Flowers sessile, bracteate; ovary sessile or shortly stalked, 0.2-0.4 cm long.

*Fls.* : March-September.

*Illus.* : Wight, Ic. t. 1724. 1851; Matthew, *Illus. Fl. Tamilnadu Carnatic* 2: t. 694. 1982.

*Distrib.* : Rare. Konkan (Cooke, *op. cit.*); Satara.

## THUNIA Reichb. f.

**Thunia venosa** Rolfe in Orchid Rev. 13: 206. 1905; Cooke, Fl. Pres. Bombay 3: 195. 1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 184, t. 43. 1966. *Phaius albus* auct. pl. non Lindl. 1830; Hook. f. Fl. Brit. India 5: 818. 1890 p.p.

Herbs, pendulous; stems 30–40 cm long. Leaves 7–13 x 1.8–3.0 cm, alternate, distichous, sessile, sheathed at base, elliptic to elliptic-lanceolate, acute, entire, 3–7-nerved. Inflorescence of compressed racemes terminating leafy stem, from a cluster of compact leaves. Flowers pedicellate, bracteate. Capsules 2–5 cm long.

*Fls. & Frts.* : July–March.

*Illus.* : Sant. & Kap. op. cit.

*Distrib.* : Bombay; Pune; Raigad; Satara.

## TRIAS Lindl.

**Trias stocksii** Bth. ex Hook. f. Fl. Brit. India 5: 781. 1890; Cooke, Fl. Pres. Bombay 3: 189. 1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 200, t. 49. 1966; Hegde & A.N.Rao in Indian J. For. 10: 196. 1987.

Rhizome brown, c 0.2 cm thick; pseudobulbs 1.0 x 1.3 cm, shortly conical-ovoid, dark olive-green or brownish-purple. Leaf solitary, 1.5–4.5 x 0.7–2.0 cm, entire, acute or obtuse. Scape 0.6–1.0 cm long, 1-flowered. Flowers 0.9–1.1 cm across, pedicellate, dark yellow. Capsules 1.2–1.4 x 1.2 cm, ovoid-orbicular, with 6 strong deep grooves.

*Fls.* : February–March; *Frts.* : November.

*Illus.* : Sant. & Kap. op. cit.

*Distrib.* : Konkan (Cooke, op. cit.).

## VANDA W. Jones ex R. Br.

1. Flowers 1.2–3.7 cm in diam.

1. Flowers 5 cm in diam.

... *V. testacea*

... *V. tessellata*

**Vanda tessellata** (Roxb.) Hook. ex G. Don in Loud. Hort. Brit. 372. 1838; Sant. & Kap. Orch. Bombay 220, t. 51. 1966; Jayaweera in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 2: 219, f. 96. 1981. *Epidendrum tessellatum* Roxb. Pl. Cor. 1: 34, t. 42. 1795. *Vanda roxburghii* R. Br. in Edw. Bot. Reg. 6: t. 506. 1820; Hook. f. Fl. Brit. India 6: 52. 1890; Cooke, Fl. Pres. Bombay 3: 208. 1958 (Repr. ed.)

Stems 0.5–1.2 cm thick, sheathed. Leaves spreading, recurved, coriaceous, 5–25 x 0.4–1.2 cm, linear-oblong, strap-shaped, entire, the apex praemorse with usually 2 unequal rounded lobes and an acute one in between. Racemes usually longer than leaves, 2- to 10-flowered. Flowers bracteate, pedicellate. Capsules c 8.0 x 1.5 cm, oblong, sharply winged, pedicelled.

*Fls. & Frts.* : March–October.

*Illus.* : Wight, Ic. t. 916. 1844–1845 (*Vanda roxburghii*); Sant. & Kap. *op.cit.*; Jayaweera in Dassan. & Fosb. *op.cit.*; Joseph in *Rec. Bot. Surv. India* 22: 130, f. 110a & b. 1982; Matthew, *Illus. Fl. Tamilnadu Carnatic* 2: t.717.1982.

*Distrib.* : Amaravati; Bhandara; Bombay; Chandrapur; Konkan (Cooke, *op. cit.*); Nagpur; Pune.

**V. testacea** (Lindl.) Reichb. f. in *Gard. Chron.* 2: 166. 1877; Sant. & Kap. *Orch. Bombay* 219. 1966. *Aerides testaceum* Lindl. *Gen. Sp. Orchid.* 238.1833. *Vanda parviflora* Lindl. in *Edw. Bot. Reg. Misc.* 30: 45. 1844; Hook. f. *Fl. Brit. India* 6: 50. 1890; Cooke, *Fl. Pres. Bombay* 2: 207. 1958 (Repr. ed.); Jayaweera in Dassan. & Fosb. *Rev. Handb. Fl. Ceylon* 2: 215, f. 95. 1981. '*Hadaicha-lasun*'.

Epiphytes; stems stout, non-pseudobulbous, 10–15 cm long, lower portion covered over by remains of old, brown leaf bases; roots large, thick, vermiform. Leaves 6.5–15.0 x 1.0–1.5 cm, linear-lorate, unequally lobed or toothed at apex, coriaceous and keeled. Flowers c 1.8 cm broad, cream-yellow with white, purple or reddish-pink lip in erect many-flowered racemes, 6–15 cm in length. Capsules c 2.5 x 0.7 cm, fusiform or oblong-ellipsoid, sharply angled.

*Fls. & Frts.* : May–July.

*Illus.* : Wight, Ic. t. 8. 1838 (*Aerides wightianum* Lindl. *Gen. Sp. Orchid.* 238.1833); Wight, *op. cit.* t. 1669. 1851 (*Vanda parviflora*); Jayaweera in Dassan. & Fosb. *op. cit.*

*Distrib.* : Bhandara; Kolhapur; Nasik; Pune; Raigad; Ratnagiri; Satara; Thane.

# ZEUXINE Lindl. ('*Zeuxina*') (*orth. & nom. cons.*)

1. Leaves sessile; peduncles, ovary and sepals glabrous; apical lobe of lip suborbicular or transversely elliptic ... *Z. strateumatica*
1. Leaves petiolate; peduncles, ovary and sepals glandular-pubescent outside with long, retrorse lax or dense hairs; apical portion of lip 2-lobulate ... *Z. longilabris*

***Zeuxine longilabris*** (Lindl.) Trim. in J. Ceylon Br. Roy. Asiat. Soc. 9: 90. 1885; Hook. f. Fl. Brit. India 6: 107. 1890; Cooke, Fl. Pres. Bombay 3: 213. 1958 (Repr. ed.); Blatt. & McC. in J. Bombay nat. Hist. Soc. 35: 731. 1932; Sant. & Kap. Orch. Bombay 169, t. 39. 1966; Hegde & A.N. Rao. in Indian J. For. 10: 197. 1987. *Monochilus longilabre* Lindl. Gen. Sp. Orchid. 487. 1840.

Herbs, 23–48 cm tall. Rhizome fleshy, greenish-brown, c 0.6 cm thick, swollen at nodes. Leaves 1–7 x 0.8–3.0 cm, ovate-oblong to ovate-lanceolate, acute, entire. Racemes 2–17 cm long, lax, secund or subsecund. Flowers greenish-white, bracteate, shortly pedicellate. Ovary brownish-green, c 1.0 x 0.2 cm, oblong, with long woolly interwoven hairs.

*Fls.* : February–March.

*Illus.* : Wight, Ic. t. 1728. 1851 non Lindl. 1840 (*Monochilus affine*); Sant. & Kap. *op. cit.*; Matthew, *Illus. Fl. Tamilnadu Carnatic* 2: t. 693. 1982.

*Distrib.* : Konkan (Cooke, *op. cit.*).

***Z. strateumatica*** (L.) Schltr. in Feddes Repert. 1: 77. 1911; Blatt. & McC. in J. Bombay nat. Hist. Soc. 35: 731. 1932; Sant. & Kap. Orch. Bombay 167, t. 38. 1966. *Orchis strateumatica* L. Sp. Pl. 943. 1753. *Zeuxine sulcata* (Roxb.) Lindl. in Royle, Ill. Bot. Himal. 1: 368. 1839; Hook. f. Fl. Brit. India 6: 106. 1890; Cooke, Fl. Pres. Bombay 3: 213. 1958 (Repr. ed.).

Herbs, 7–40 cm tall, from an underground rhizome which is covered by a fine network of thin, hair-like roots. Leaves alternate, 1.8–9.0 x 0.3–0.6 cm, linear or linear-lanceolate, acute, margins entire, slightly turned outwards. Inflorescence erect or slightly decurved, 1.5–18.0 cm long. Flowers sessile, bracteate, in dense spirally arranged secund or subsecund spikes. Capsules broadly ovoid, strongly ribbed. Seeds minute, powdery, deep brown.

*Fls. & Frts.* : January–March.

*Illus.* : Wight, Ic. t. 1724. bis 1851 (*Z. bracteata*); Wight, *op. cit.* t. 1725 (*Z. brevifolia*); Wight, *op. cit.* t. 1726 (*Z. robusta*); Sant. & Kap. *op. cit.*; Jayaweera in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 2: 317, f. 139. 1981.

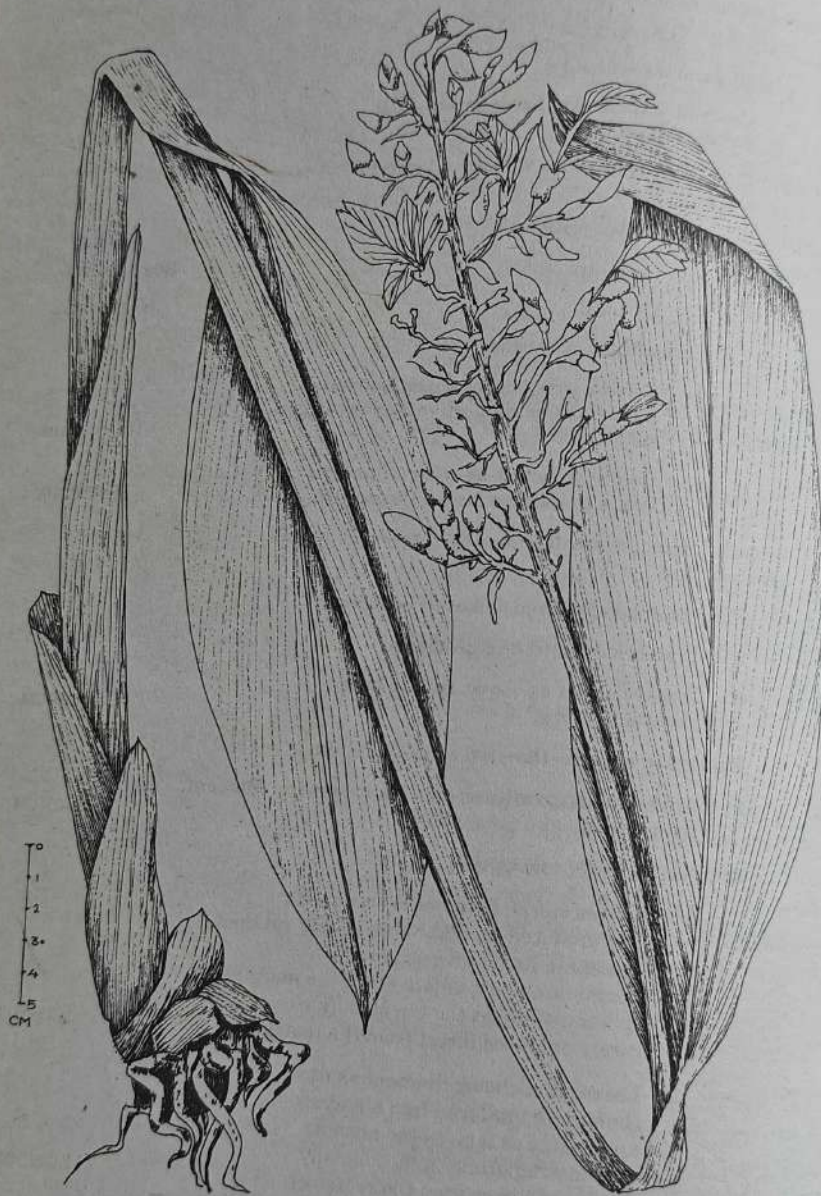
*Distrib.* : Akola; Kolhapur; Konkan (Cooke, *op. cit.*); Nagpur; Nasik; Osmanabad; Pune; Yavatmal.

ZINGIBERACEAE

1. Ovary 1-celled; placentas parietal ... GLOBBA
1. Ovary 3-celled; placentas axile : ...
2. Lateral staminodes broad :
  3. Connective spurred at base; corolla-tube funnel-shaped ... CURCUMA
  3. Connective not spurred at base; corolla-tube long, slender :
    4. Connective crested :
      5. Lip entire ... BOESENBERGIA
      5. Lip bifid ... KAEMPFERIA
    4. Connective not crested :
      6. Corolla-tube long exserted from bracts; filaments and connective narrow; stigma subglobose ... HEDYCHUM
      6. Corolla-tube not as above; filaments complicate; connective broad; stigma turbinate ... HITCHENIA
2. Lateral staminodes small or absent, rarely narrow and adnate to lip :
  7. Flowers in lax-flowered spikes or panicles :
    8. Bracteoles funnel or cup-shaped ... ALPINIA
    8. Bracteoles not as above, split to base, sheathing or flat ... CATIMBIUM
  7. Flowers in a dense-flowered cone-like spike :
    9. Anther-cells divaricate, on a short arcuate filament, with or without a petaloid crest ... AMOMUM
    9. Anther-cells contiguous, parallel :
      10. Leaves spiral; filament forming with the produced connective on oblong petaloid process in its middle; stigma with a semi-lunar pit, ciliate along the margin; spikes usually at the top of leafy stems, rarely produced direct from the rootstock ... COSTUS
      10. Leaves distichous; filament short; connective produced into a narrow appendage as long as the anther; stigma subglobose; spikes usually produced direct from the rootstock ... ZINGIBER

ALPINIA Roxb. (nom.cons.)

1. Bracteoles tubular, persistent; fruits black ... A. nigra



*Alpinia galanga* (L.) Swartz

1. Bracteoles
2. Inflor  
remai  
with
2. Inflor  
usual

*Alpinia*  
Baker in Ho  
245. 1958 (C  
Handb. Fl. C  
Repos. t. 42)

Herbs,  
2.5-5.0 cm,  
long. Lip ye

Fls. &

Illus.  
Carnatic 2:

Distrib

*A. gal*  
Brit. India  
ed.); Burt.  
*Maranta go*

Herbs  
22.5-45.0  
Panicles 15  
diam., glob

Fls. &

Distrib

*A. nig*  
1977. Zing  
allughas (F  
f. Fl. Brit.  
(Repr. ed.);  
1972. 'Tara

Herbs  
Leaves 20-  
oblong-lan

1. Bracteoles open to base, often deciduous; fruits red :
2. Inflorescence branched : bracteoles not enfolding the remainder of the several-flowered cincinnus; labellum with a long claw ... *A. galanga*
2. Inflorescence unbranched : bracteoles enfolding the usually 2-flowered cincinnus; labellum without a claw ... *A. calcarata*

**Alpinia calcarata** (Haw.) Rosc. in Trans. Linn. Soc. 8: 347. 1807; Baker in Hook. f. Fl. Brit. India 6: 254. 1892; Cooke, Fl. Pres. Bombay 3: 245. 1958 (Repr. ed.); Burt & R.M. Smith in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 4: 517. 1983. *Renealmia calcarata* Haw. in Andr. Bot. Repos. t. 421. 1804.

Herbs, c 1.5 m high; rootstock perennial. Leaves sessile, 15-30 x 2.5-5.0 cm, lanceolate, acuminate, green, glossy. Panicles 7.5-10.0 cm long. Lip yellow, streaked with purple veins. Capsules globose.

*Fls. & Frts.* : December-April.

*Illus.* : Wight, Ic. t. 2028. 1853; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 725. 1982.

*Distrib.* : S. Konkan (Baker in Hook. f. *op.cit.*); Satara.

**A. galanga** (L.) Swartz, Obs. Bot. 8. 1791; Baker in Hook. f. Fl. Brit. India 6: 253. 1892; Cooke, Fl. Pres. Bombay 3: 244. 1958 (Repr. ed.); Burt & R.M. Smith in Notes Roy. Bot. Gard. Edinb. 31: 186. 1972. *Maranta galanga* L. Sp. Pl. ed. 2. 2. 1762. 'Kulinjan'.

Herbs; rootstock perennial, tuberous, slightly aromatic. Leaves 22.5-45.0 x 3.7-11.2 cm, oblong-lanceolate, acute, margins white. Panicles 15-30 cm long. Flowers greenish-white. Capsules c 1 cm in diam., globose.

*Fls. & Frts.* : May-June.

*Distrib.* : Sindhudurg (S.M. Almeida, Fl. Savantwadi 2: 25. 1990).

**A. nigra** (Gaertn.) Burt in Notes Roy. Bot. Gard. Edinb. 35: 213. 1977. *Zingiber nigrum* Gaertn. Fruct. 1: 35, t. 12. 1788. *Alpinia allughas* (Retz.) Rosc. in Trans. Linn. Soc. 8: 346. 1807; Baker in Hook. f. Fl. Brit. India 6: 253. 1892; Cooke, Fl. Pres. Bombay 3: 244. 1958 (Repr. ed.); Burt & R.M. Smith in Notes Roy. Bot. Gard. Edinb. 31: 201. 1972. 'Taraka'.

Herbs, 0.9-1.8 m high, stout, perennial; roots tuberous, aromatic. Leaves 20-45 x 4.5-10.0 cm, sessile or nearly so, linear-oblong or oblong-lanceolate, acuminate, cuspidate, base acute. Panicles 15-30 cm

long. Flowers pink. Capsules 1.75–2.0 cm in diam., thin, globose, irregularly rupturing. Seeds many, small, black, angular.

*Illus.* : Burt & R.M. Smith in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 4: 512, f. 3B. 1983.

*Distrib.* : Pune; Sindhudurg (S.M. Almeida, Fl. Savantwadi 2:25, 1990).

#### AMOMUM Roxb. (*nom. cons.*)

**Amomum pterocarpum** Thw. Enum. Pl. Zeyl. 317. 1861; Baker in Hook. f. Fl. Brit. India 6: 241. 1892; Burt & R.M. Smith in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 4: 523, f. 4A. 1983. *A. microstephanum* Baker in Hook. f. *op.cit.* 239; Cooke, Fl. Pres. Bombay 3: 239. 1958 (Repr. ed.).

Herbs, reaching up to 1.2 m or more high; stems leafy. Leaves 50–60 x 3.7–10.0 cm, linear-lanceolate, acuminate, glabrous above, silky-pubescent beneath, base tapering. Flowers white. Capsules 9-ribbed, echinate.

*Fls. & Frts.* : May–June.

*Illus.* : Ramam. in Sald. & Nicols. Fl. Hassan Dt. 763, f. 113. C–Cb. 1976 (*A. microstephanum*); Burt & R.M. Smith in Dassan. & Fosb. *op.cit.*

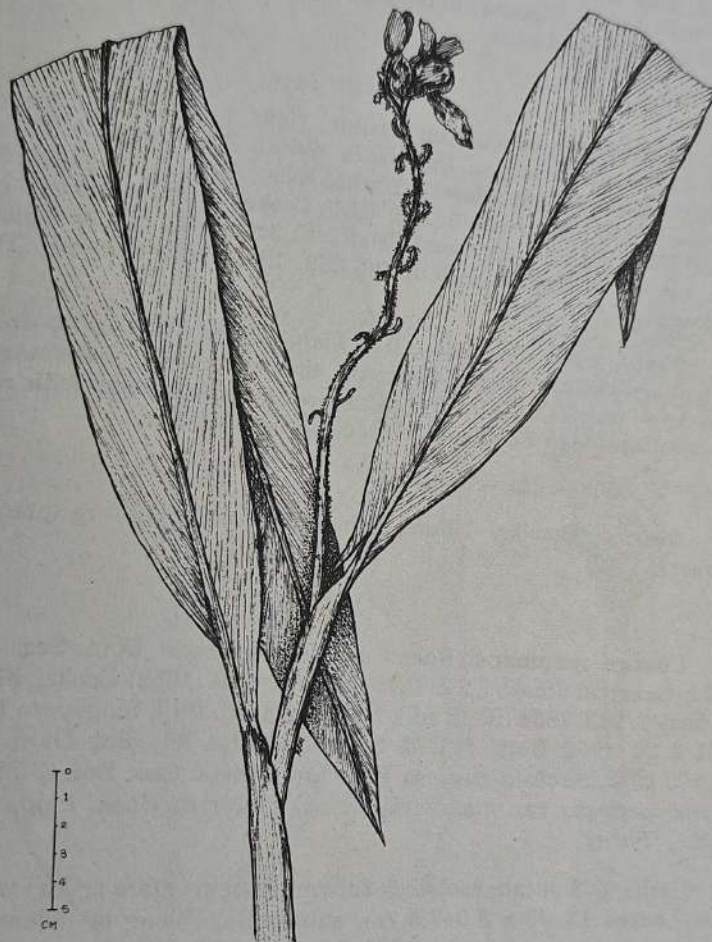
*Distrib.* : Rare in moist situations along streams in plains. Sindhudurg.

#### BOESENBERGIA O. Ktze.

**Boesenbergia rotunda** (L.) Mansf. in Kulturpfl. 6: 239. 1958; Burt in Manilal, Bot. Hist. Hort. Malab. 148. 1980. *Curcuma rotunda* L. Sp. Pl. 2. 1753. *Kaempferia pandurata* Roxb. in Asiat. Res. 11: 328, t. 2. 1810; Baker in Hook. f. Fl. Brit. India 6: 220. 1892; Cooke, Fl. Pres. Bombay 3: 232. 1958 (Repr. ed.).

Stemless; rootstock horizontal, bright yellow within, branches many, nodose, root-fibres thick, succulent, vermiform. Leaves few, 22.5–37.5 x 4.5–10.0 cm, distichous, elliptic-oblong, acute or shortly acuminate, decurrent into a long deeply channelled petiole, c 15 cm long. Flowers white or pink, in terminal spikes.

*Distrib.* : Konkan (Cooke, *op.cit.*).



*Catimbum speciosum* (Wendl.) Holtt.

*Notes* : Graham (1839) notes this as occurring in the Konkan and Gujarat on the authority of Nimmo. It has not, however, been found in either locality by recent collectors, while Dalzell and Gibson (1861) say that they have not been able to trace the plant in the S. Konkan and deny that it is indigenous in the Bombay Presidency. Cooke (*op.cit.*) has not seen any specimens.

## CATIMBIUM Juss.

*Catimbium speciosum* (Wendl.) Holtt. in Gard. Bull. Singapore 13: 152. 1950. *Zerumbet speciosum* Wendl. Sert. Hann. t. 19. 1798. *Alpinia nutans* (Andr.) Rosc. in Smith, Exot. Bot. 2: t. 106. 1805; Baker in Hook. f. Fl. Brit. India 6: 256. 1890; Cooke, Fl. Pres. Bombay 3: 245. 1958 (Repr. ed.). '*A. speciosa* (Wendl.) K. Schum. Fl. Kaiser-Wilhelms. 29. 1887 & in Engl. Pflanzenr. 20: 339. 1904. '*Nag-damani*', '*Puna-champa*'.

Herbs, erect; stems 2.4–3.0 m high. Leaves 30–60 x 7.5–15.0 cm, oblong-lanceolate, glabrescent, tip shortly pointed, base narrowly cuneate. Panicles 15–30 cm long. Flowers white, tinged with rose or purple. Capsules c 2 cm in diam., round, slightly hairy.

*Fls. & Frts.* : July–August.

*Distrib.* : Bombay; Dhule; Pune; Raigad; Sindhudurg (planted in nursery).

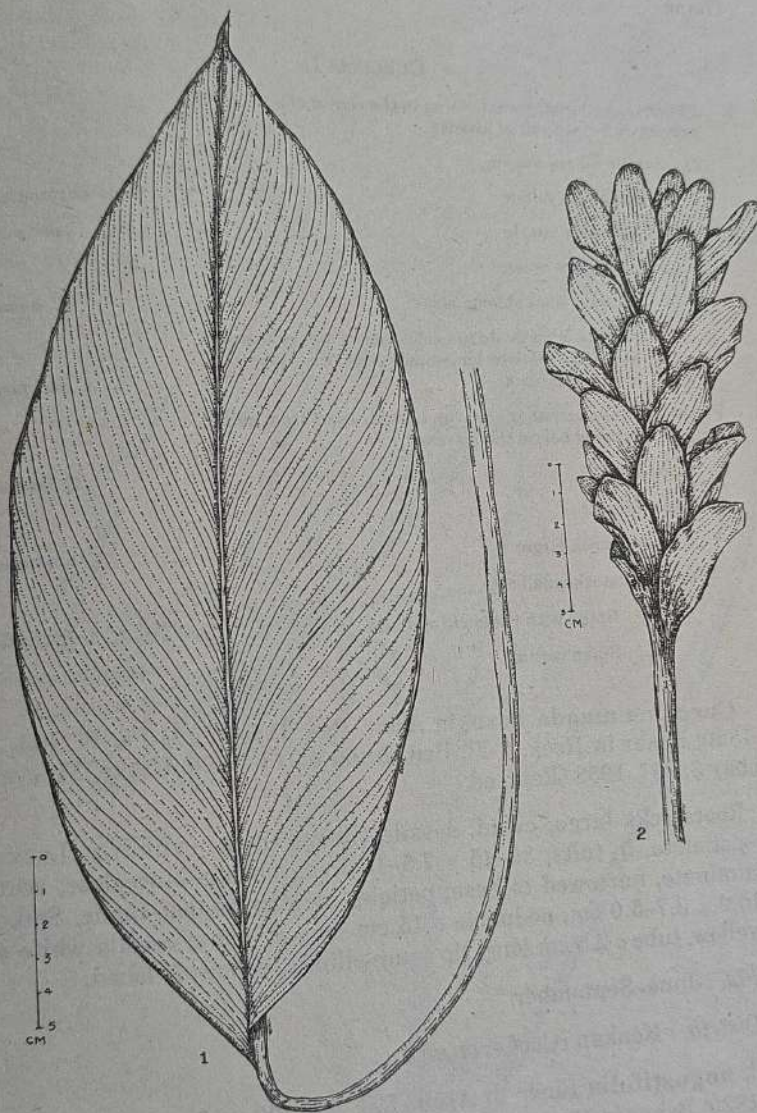
## COSTUS L.

*Costus speciosus* (Koen.) J.E.Sm. in Trans. Linn. Soc. 1: 249. 1800; Baker in Hook. f. Fl. Brit. India 6: 249. 1892; Cooke, Fl. Pres. Bombay 3: 243. 1958 (Repr. ed.); Holtt. in Gard. Bull. Singapore 13: 242. f. 31 & 32. 1950; Burt & R.M. Smith in Notes Roy. Bot. Gard. Edinb. 31: 200. 1972. *Banksia speciosa* Koen. apud Retz. Obs. Bot. 3: 75. 1783. *Costus speciosus* var. *nipalensis* (Rosc.) Baker in Hook. f. *op.cit.* 250. '*Kosht*', '*Piway*'.

Herbs, 2–3 m tall; rootstock tuberous; stems more or less woody at base. Leaves 15–30 x 3.0–7.5 cm, subsessile, oblong or oblanceolate-oblong, acute or acuminate, often cuspidate, glabrous above, silky-pubescent beneath, base rounded. Inflorescence of dense spikes, 5.0–12.5 x 3.7–7.5 cm. Flowers white. Capsules globosely 3-gonous, c 2 cm in diam., red. Seeds black, aril white.

*Fls. & Frts.* : August–February.

*Illus.* : Wight, Ic. t. 2014. 1853; Holtt. *op.cit.*; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 726. 1982.



*Curcuma angustifolia* Roxb.  
1. Leaf 2. Inflorescence

Fl.

*Distrib.* : Ahmednagar; Amaravati; Bhandara; Bombay; Chandrapur; Kolhapur; Nasik; Pune; Raigad; Ratnagiri; Sindhudurg; Thane.

## CURCUMA L.

- |   |                              |
|---|------------------------------|
| 1. Flowering spike autumnal, rising in the centre of a previously formed tuft of leaves :                             |                              |
| 2. Sessile tubers absent :  |                              |
| 3. Flowers yellow   | ... <i>C. pseudomontana</i>  |
| 3. Flowers purple   | ... <i>C. decipiens</i>      |
| 2. Sessile tubers present :   |                              |
| 4. Corolla lobes oblong, acute  | ... <i>C. amada</i>          |
| 4. Corolla lobes ovate to ovate-lanceolate, subsaccate at tip, dorsal-lobe long-mucronate, side-lobes rounded at apex | ... <i>C. purpurea</i>       |
| 1. Flowering spike vernal or aestival, lateral, apart from and usually appearing before the leaves :                  |                              |
| 5. Lip obovate  | ... <i>C. inodora</i>        |
| 5. Lip orbicular :  |                              |
| 6. Rootstock large  | ... <i>C. aromatica</i>      |
| 6. Rootstock small :  |                              |
| 7. Spike with peduncle aestival   | ... <i>C. angustifolia</i>   |
| 7. Spike vernal   | ... <i>C. neilgherrensis</i> |

**Curcuma amada** Roxb. in Asiat. Res. 11:341. 1810 & Fl. Ind. 1: 33. 1820; Baker in Hook. f. Fl. Brit. India 6:213. 1890; Cooke, Fl. Pres. Bombay 3: 237. 1958 (Repr. ed.)

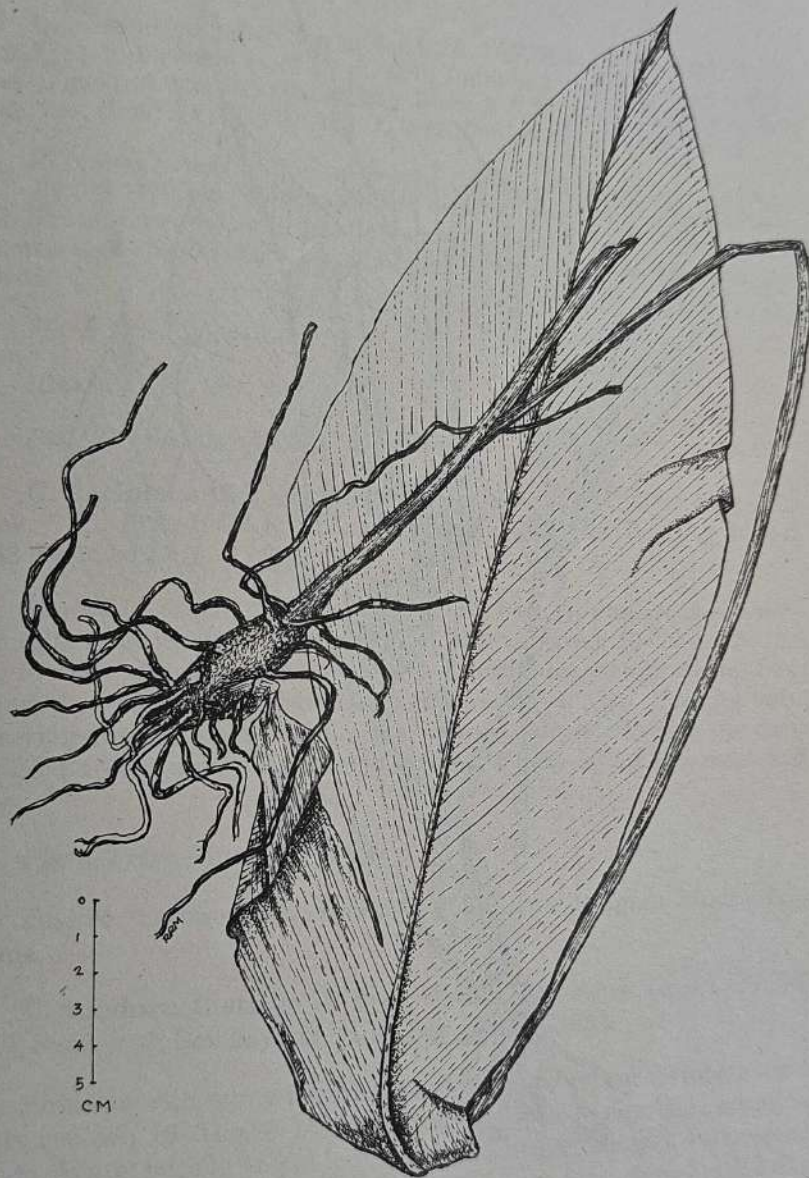
Rootstocks large, ovoid; sessile tubers thick, cylindric. Leaves long-petiolate, in tufts, 30-45 x 7.5-12.5 cm, oblong-lanceolate, acute or acuminate, narrowed to base; petioles as long as leaf-blade. Spikes 7.5-15.0 x 3.7-5.0 cm; peduncle c 15 cm long or more; corolla white or pale yellow, tube c 2.5 cm long, lip semi-elliptic, yellow, 3-lobed.

*Fls.* : June-September.

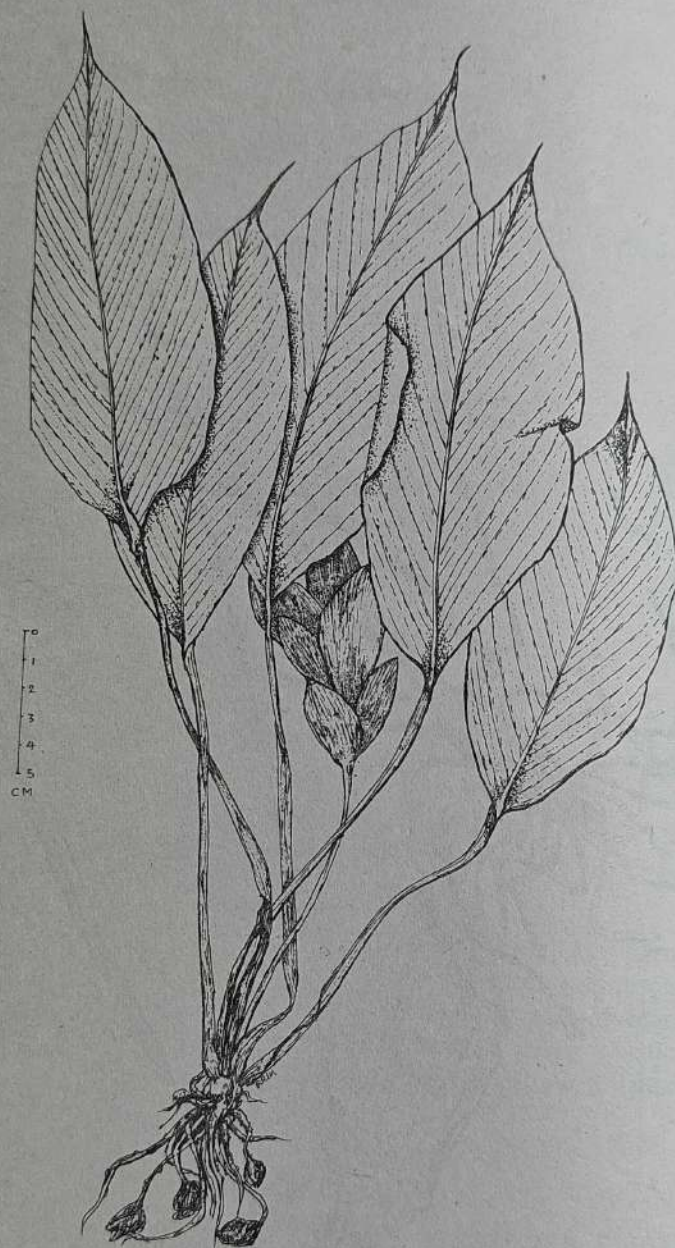
*Distrib.* : Konkan (Cooke, *op.cit.*).

**C. angustifolia** Roxb. in Asiat. Res. 11: 338, t. 3. 1810 & Fl. Ind. 1: 31. 1820; Baker in Hook. f. Fl. Brit. India 6: 210. 1890.

Rootstock globose; tubers many, oblong, at the end of long fibres. Leaves 15-30 x 5.0-7.5 cm, lanceolate; petiole 30-45 cm long. Spikes



*Curcuma aromatica* Salisb.



*Curcuma decipiens* Dalz.

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7.5–15.0 x 5 cm; peduncle 15–30 cm long. Flowers pale yellow. Capsules globose, membranous.

*Distrib.* : Rare. Pune.

**C. aromatica** Salisb. Parad. 20: t. 96. 1807 & in Trans. Hort. Soc. 1: 285. 1812; Baker in Hook. f. Fl. Brit. India 6: 210. 1890; Cooke, Fl. Pres. Bombay 3: 236. 1958 (Repr. ed.); Burt & R.M. Smith in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 4: 503. 1983. 'Amba-halad', 'Ran-haldi'.

Rhizomes yellow within, aromatic; tubers globose, yellow. Leaves 37.5–60.0 x 10–20 cm, oblong-elliptic or oblong-lanceolate, caudate-acuminate, base deltoid; petioles as long as or longer than blade. Inflorescence 15–30 x 9 cm. Corolla pinkish-white. Capsules globose, 3-valved.

*Fls. & Frts.* : May–July.

*Illus.* : Wight, Ic. t. 2005. 1853.

*Distrib.* : Bombay; Satara; Sindhudurg.

**C. decipiens** Dalz. in Hook. Kew J. Bot. 2: 144. 1850; Baker in Hook. f. Fl. Brit. India 6: 215. 1890; Cooke, Fl. Pres. Bombay 3: 237. 1958 (Repr. ed.).

Herbs, 15–25 cm tall; rootstock small, bearing numerous almond-like tubers, white inside at the end of fibres. Leaves 15–20 x 7.5–12.5 cm, broadly elliptic, shortly deltoid-acuminate, membranous, base rounded or subcordate. Spikes 3.7–12.5 x 2.5–4.0 cm. Flowers twin; flowering bracts c 2.5 cm long, ovate, saccate, purple; bracts of the coma oblong, purple; lip 2-fid, margins crisped. Fruits c 1 x 0.5 cm, ovoid, hairy.

*Fls. & Frts.* : June–September.

*Distrib.* : Amaravati; Bombay; Kolhapur; Raigad; Sindhudurg; Thane.

**C. inodora** Blatt. in J. Proc. Asiat. Soc. Beng. (N.S.). 26: 357. 1930; Sant. in J. Bombay nat. Hist. Soc. 51: 135. 1952.

Rhizome with many tuberiferous fibrous roots; tubers white inside. Leaves radical, 16–31 x 7–14 cm, broadly elliptic-lanceolate, acuminate at tip, plicate; petiole 16 cm long, deeply concave, winged. Inflorescence lateral; peduncle 10 cm long. Spikes 10–20 cm long. Flowers 2.0–2.5 x 1.2–1.8 cm; corolla purplish with a yellow streak on the lip. Capsules 3-valved. Seeds arillate.

*Fls. & Frts.* : June–November.

*Illus.* : Sant. *op.cit.* opp. page 136, f. 1.

*Distrib.* : Bombay; Buldhana; Kolhapur; Nasik; Raigad; Ratnagiri; Thane.

**C. neilgherrensis** Wight, Ic. t. 2006. 1853; Baker in Hook. f. Fl. Brit. India 6: 210. 1890; Cooke, Fl. Pres. Bombay 3: 235. 1958 (Repr. ed.).

Herbs, 8–12 cm tall; rootstock white inside; root-fibres numerous, slender. Leaves 15–25 x 3.7–6.2 cm, shortly petiolate, lanceolate or oblong-lanceolate, acuminate, narrowed to base. Flowers bright yellow; corollatube c 1.5 cm long, lobes oblong; lip coloured more than lobes, 2-fid at apex. Capsules c 1.2 cm in diam., globose.

*Fls. & Frts.* : May–June.

*Illus.* : Wight, *op. cit.*; Ramam. in Sald. & Nicols. Fl. Hassan Dt. 763, f. 113D. 1976; Matthew, *Illus. Fl. Tamilnadu Carnatic* 2: tt. 727 & 978a. 1982.

*Distrib.* : Amaravati; Pune; Sindhudurg.

**C. pseudomontana** Grah. Cat. Bombay Pl. 210. 1839; Cooke, Fl. Pres. Bombay 3:236. 1958 (Repr. ed.); Mangaly & Sabu in J. Econ. Tax. Bot. 10: 160, figs. A–G. 1987. *C. montana* Baker in Hook. f. Fl. Brit. India 6: 214. 1890 *p.p. non* Rosc. 1828. 'Ram Haldi', 'Shilandh', 'Shindalvan', 'Sindarbar'.

Herbs, scapigerous c 45 cm tall; rhizomes small, 3–6 x 1.0–2.5 cm; roots fibrous. Leaves 6–30 x 4–12 cm, oblanceolate or oblong-lanceolate, apex acuminate or acute, petiolate. Inflorescence of spikes, lateral and central, 10–14 x 4.5 cm. Flowers 4–6 cm long, with bright yellow staminodes. Capsules 1.4 x 1.0 cm, subglobose, 3-valved. Seeds many, arillate.

*Fls. & Frts.* : May–September.

*Illus.* : Sant. in J. Bombay nat. Hist. Soc. 51: opp. page 136, f. 2. 1952; Mangaly & Sabu, *op. cit.*

*Distrib.* : Ahmednagar; Akola; Amaravati; Aurangabad; Bhandara; Bombay; Chandrapur; Kolhapur; Nagpur; Nasik; Pune; Raigad; Satara; Sindhudurg; Thane; Yavatmal.

**C. purpurea** Blatt. in J. Proc. As. Soc. Beng. (N.S.) 26: 358. 1931; Sant. in Rec. Bot. Surv. India 16(1): 274. 1967 (3rd Rev. ed.).

Root-fibres thick; sessile tubers c 4 x 1 cm, faintly aromatic. Leaves c 20 x 8 cm, acuminate, plaited; petiole c 15 cm long, deeply furrowed, winged. Lower bracts shorter and broader than upper. Calyx c 1 cm long, tubular, shortly and irregularly 3-lobed at apex; corolla c 4.3 cm long, tube 3 cm long, white; side-lobes purplish; staminodes and lip almost of equal length; ovary densely soft-bristly upwards.

*Fls.* : June-July.

*Distrib.* : Pune (Blatt. *op.cit.* & Sant. *op.cit.*).

#### CULTIVATED SPECIES :

**C. longa** L. Sp. Pl. 2. 1753, *pro max parte*; Baker in Hook. f. Fl. Brit. India 6:214. 1890; Cooke, Fl. Pres. Bombay 3: 238. 1958 (Repr. ed.); Burt in Notes Roy. Bot. Gard. Edinb. 35: 212. 1977. 'Halad', 'Haldi'.

Herbs, tall; rootstock ovoid; sessile tubers cylindric. Leaves up to 50 x 8 cm, oblong-lanceolate, apex caudate-acuminate, base tapering. Spikes 10-15 cm long. Corolla white; flowering bracts pale green; bracts of coma tinged with pink.

*Fls. & Frts.* : June-November.

*Distrib.* : Cultivated for the turmeric obtained from the rhizomes, but is doubtfully wild (Cooke, *op.cit.*). Kolhapur; Nagpur; Osmanabad; Sindhudurg.

**C. zedoaria** (Christm.) Rose. in Trans. Linn. Soc. 8: 354. 1862; Baker in Hook. f. Fl. Brit. India 6: 210. 1890; Cooke, Fl. Pres. Bombay 3: 238. 1958 (Repr. ed.); Holtt. in Gard. Bull. Singapore 13: 71, f. 5. 1950; Burt & R.M. Smith in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 4: 501, f. 2. 1983. *Amomum zedoaria* Christm. in Christm. & Panzer in Linn. Pflanzensyst. 5: 12. 1779. 'Kachora'.

Rhizomes pale-yellowish-white; tubers white. Leaves 4-6, 20-60 x 8-10 cm, oblong or narrowly oblong-lanceolate, apex acuminate; petiole shorter than blade. Inflorescence 10-18 x 6-8 cm. Flowers yellow. Capsules ovoid, 3-gonous, thin, smooth, dehiscing irregularly. Seeds ellipsoid with a white lacerate aril.

*Fls. & Frts.* : July-September.

*Illus.* : Holtt. *op.cit.*; Burt & R.M. Smith in Dassan. & Fosb. *op.cit.*

*Distrib.* : Cultivated. Bombay; Chandrapur; Raigad; Satara.

## GLOBBA L.

- |                                       |     |                        |
|---------------------------------------|-----|------------------------|
| 1. Inflorescence of spikes or racemes | ... | <i>G. marantina</i>    |
| 1. Inflorescence of panicles :        |     |                        |
| 2. Bracts linear                      | ... | <i>G. canarensis</i>   |
| 2. Bracts ovate                       | ... | <i>G. platystachya</i> |

**Globba canarensis** Baker in Hook. f. Fl. Brit. India 6: 206. 1890; Cooke, Fl. Pres. Bombay 3: 230. 1958 (Repr. ed.).

Herbs, erect, up to 85 cm long, drooping; roots fascicled, tuberous. Leaves up to 12.0 x 3.7 cm, caudate; sheaths glabrous except the ciliate margins. Inflorescence lax, 6.5–27.0 cm long; the lowest bracts ciliate apart, up to 5.5 x 0.4 cm. Bulbils acuminate, 1.2 cm long.

*Distrib.* : Rare in the sacred grooves. Ratnagiri (S.M. Almeida, 1983-86).

**G. marantina** L. Mant. Alt. 170. 1771; Baker in Hook. f. Fl. Brit. India 6: 206. 1890; Burt & R.M. Smith in Dassan & Fosb. Rev. Handb. Fl. Ceylon 4: 499. 1983. *G. bulbifera* Roxb. in Asiat. Res. 11: 358. 1810 & Fl. Ind. 1: 78. 1820; Baker in Hook. f. *op. cit.*; Cooke, Fl. Pres. Bombay 3: 230. 1958 (Repr. ed.).

Stems 20–60 cm high, slender, erect or drooping; root of fleshy fibres. Leaves 7.5–17.5 x 2.5–4.5 cm, elliptic-lanceolate or oblong-lanceolate, distichous, shortly petiolate. Racemes or spikes 5.0–8.7 cm long. Flowers yellow. Capsules c 0.63 cm long, oblong, terete, smooth.

*Fls. & Frts.* : August–November.

*Illus.* : Wight, Ic. t. 2001. 1853 (*G. marantoides*); Ramam. in Sald. & Nicols. Fl. Hassan Dt. 763, f. 113F–Fa. 1976; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 729. 1982 (*G. bulbifera*).

*Distrib.* : Infrequent along coast and in moist, shady places in deciduous forests from lower ghats to plains. Ratnagiri; Satara; Sindhudurg.

**G. platystachya** Baker in Hook. f. Fl. Brit. India 6: 206. 1890; Cooke, Fl. Pres. Bombay 3: 230. 1958 (Repr. ed.).

Leaves large and thin. Panicles short, lax and broad, lower branches 5–10 cm long, ending in a bulbil and bearing numerous close flowers, shortly pedicellate towards end, each subtended by a small

persistent ovate acutely-keeled bract; calyx green, broadly funnel-shaped, c 0.2 cm long; corolla-tube 3 times the length of the calyx, corolla-segments oblong, yellow.

*Note* : This has been included on the authority of Hook. f. (*op.cit.*) and Cooke (*op. cit.*) who have reported it from Konkan.

HEDYCHIUM Koen.

1. Stem 0.9-1.5 m high; flowers white

1. Stem shorter; flowers bright yellow

... *H. coronarium*

... *H. flavum*

**Hedychium coronarium** Koen. in Retz. Obs. Bot. 3: 73. 1783; Baker in Hook. f. Fl. Brit. India 6: 225. 1892; Cooke, Fl. Pres. Bombay 3: 234. 1958 (Repr. ed.). 'Sontaka'.

Stems erect; rootstocks stout, horizontal, 1.2-5.0 cm in diam., fleshy, jointed. Leaves sessile, 22.5-35.0 x 3.0-5.6 cm, lanceolate, finely acuminate, narrowed at base. Flowers fragrant in dense oblong spikes, 10-20 cm long. Capsules oblong, valves orange-yellow inside. Seeds many, aril crimson.

*Fls. & Frts.* : August-October.

*Illus.* : Matthew, Illus. Fl. Tamilnadu Carnatic 2: tt. 730 & 978b. 1982.

*Distrib.* : Bombay; Kolhapur; Konkan (Cooke, *op.cit.*); Nagpur; Pune; Satara.

**H. flavum** Roxb. Fl. Ind. 1: 12. 1820. *H. coronarium* var. *flavum* (Roxb.) Baker in Hook. f. Fl. Brit. India 6: 226. 1892. *H. coronarium* var. *urophyllum* (Lodd.) Baker in Hook. f. *op. cit.*

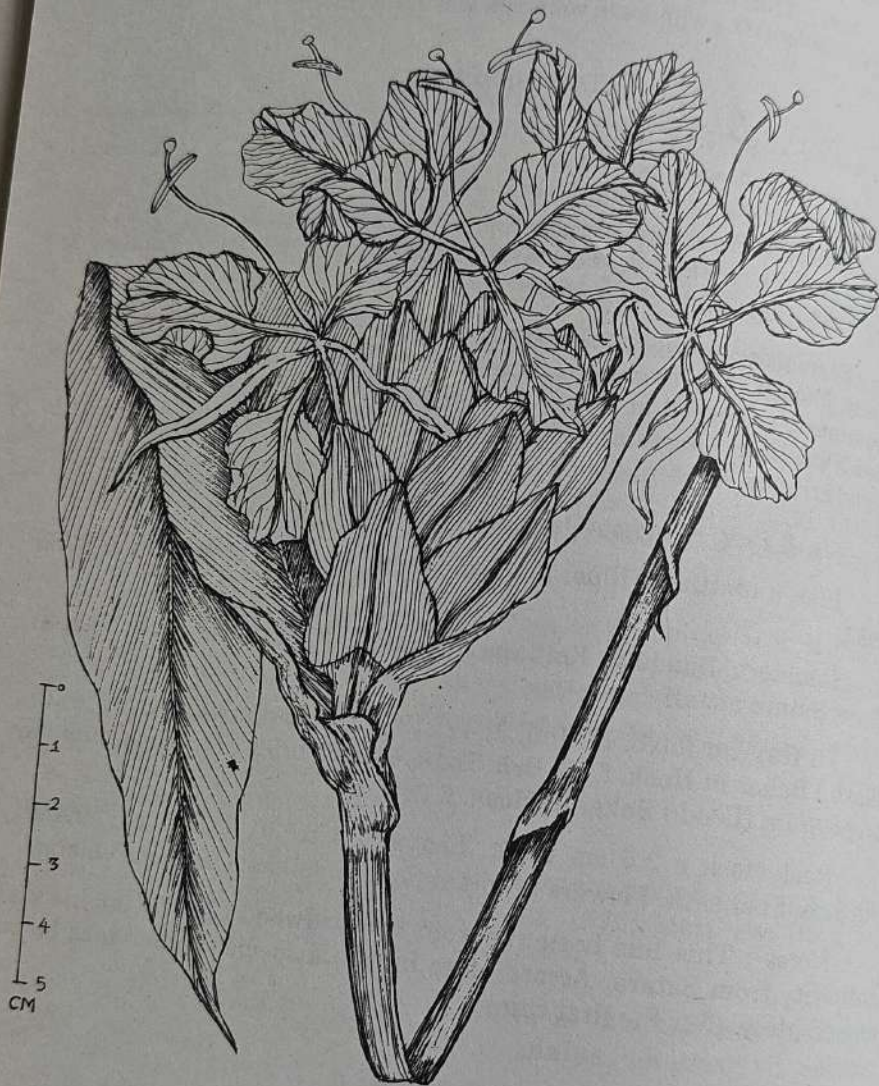
Root stock c 2.5 cm thick. Leaves up to 30 x 12.5 cm, usually pubescent beneath. Flowers bright yellow, in spikes. Capsules oblong.

*Notes* : This has been reported by Birdwood (1897), on Lisboa's authority from Satara. According to him this species comes into bloom immediately after the first rains.

HITCHENIA Wall.

**Hitchenia caulina** (Grah.) Baker in Hook. f. Fl. Brit. India 6: 224. 1890; Cooke, Fl. Pres. Bombay 3: 233. 1958 (Repr. ed.) *Curcuma caulina* Grah. Cat. Pl. Bombay 210. 1839. 'Chavar', 'Chowar'.

Rhizome with many ellipsoid hanging tubers; tubers white inside; stems leafy, 0.9-1.2 m high. Leaves 30-50 x 7.5-15.0 cm, oblong-



*Hedychium flavum* Roxb.



*Hitchenia caulina* (Grah.) Baker

lanceolate, acuminate, narrowed at base; petioles sheathing. Flowers yellow, in 10–15 cm long spikes. Capsules oblong, coriaceous. Seeds ovoid with a lacerate aril.

*Fls. & Frts.* : July–October.

*Distrib.* : Pune; Satara.

#### KAEMPFERIA L.

1. Leafy stem produced; spikes terminal; anther-crest entire, ciliate ...
1. Stemless; spikes central, radical; anther-crest 2-lobed or 2-fid ...

*K. scaposa*

*K. galanga*

***Kaempferia galanga*** L. Sp. Pl. 2. 1753; Baker in Hook. f. Fl. Brit. India 6: 219. 1890; Cooke, Fl. Pres. Bombay 3: 231. 1958 (Repr. ed.). 'Chanda-mula'.

Rootstocks tuberous, aromatic; root-fibres fleshy, cylindric. Leaves 2, spreading horizontally, 6.2–12.5 x 4.5–8.7 cm, rotund-ovate, deltoid-acuminate, thin, 10–12-ribbed; petioles short, channelled. Flowers 6–12, white.

*Fls.* : June–July.

*Distrib.* : Deccan & Konkan (Cooke, *op.cit.*).

***K. scaposa*** (Nimmo) Bth. in Bth. & Hook. f. Gen. Pl. 3: 642. 1883; Baker in Hook. f. Fl. Brit. India 6: 224. 1890; Cooke, Fl. Pres. Bombay 3: 232. 1958 (Repr. ed.); Burt & R.M. Smith in Notes Roy. Bot. Gard. Edinb. 31: 218. 1972. *Hedychium scaposum* Nimmo in Grah. Cat. Pl. Bombay 205. 1839. 'Chohola', 'Sunha'.

Herbs, 20–50 cm tall; rootstock tuberous, oblique; root-fibres long, slender. Leaves numerous, 20–30 x 5.0–7.5 cm, oblong-lanceolate, long-acuminate, narrowed into a deeply channelled petiole as long as blade. Flowers white, 2.5–4.0 cm across, in spikes, 7.5–22.5 cm long. Capsules obovoid, red, submentose, c 1.2 cm long.

*Fls. & Frts.* : July–November.

*Illus.* : Wight, Ic. t. 2030. 1853.

*Distrib.* : Chandrapur; Kolhapur; Pune; Raigad; Ratnagiri; Sindhudurg.

#### CULTIV

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1976.

CULTIVATED SPECIES :

**K. rotunda** L. Sp. Pl. 3. 1753; Baker in Hook. f. Fl. Brit. India 6: 222. 1890; Cooke, Fl. Pres. Bombay 3: 233. 1958 (Repr. ed.); Holtt. in Gard. Bull. Singapore 13: 120, f. 14. 1950; Burt & R.M. Smith in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 4: 509. 1983. 'Bhui-champa'.

Rhizome bearing oblong tubers, c 5 cm long. Leaves 3, 30-45 x 11-12 cm, oblong, acuminate. Inflorescence appearing before the leaves, sessile, 4-6-flowered. Labellum lilac.

Fls. : March-April.

Illus. : Holtt. op.cit.

Distrib. : Cultivated. Pune.

ZINGIBER Boehm. (nom. cons.)

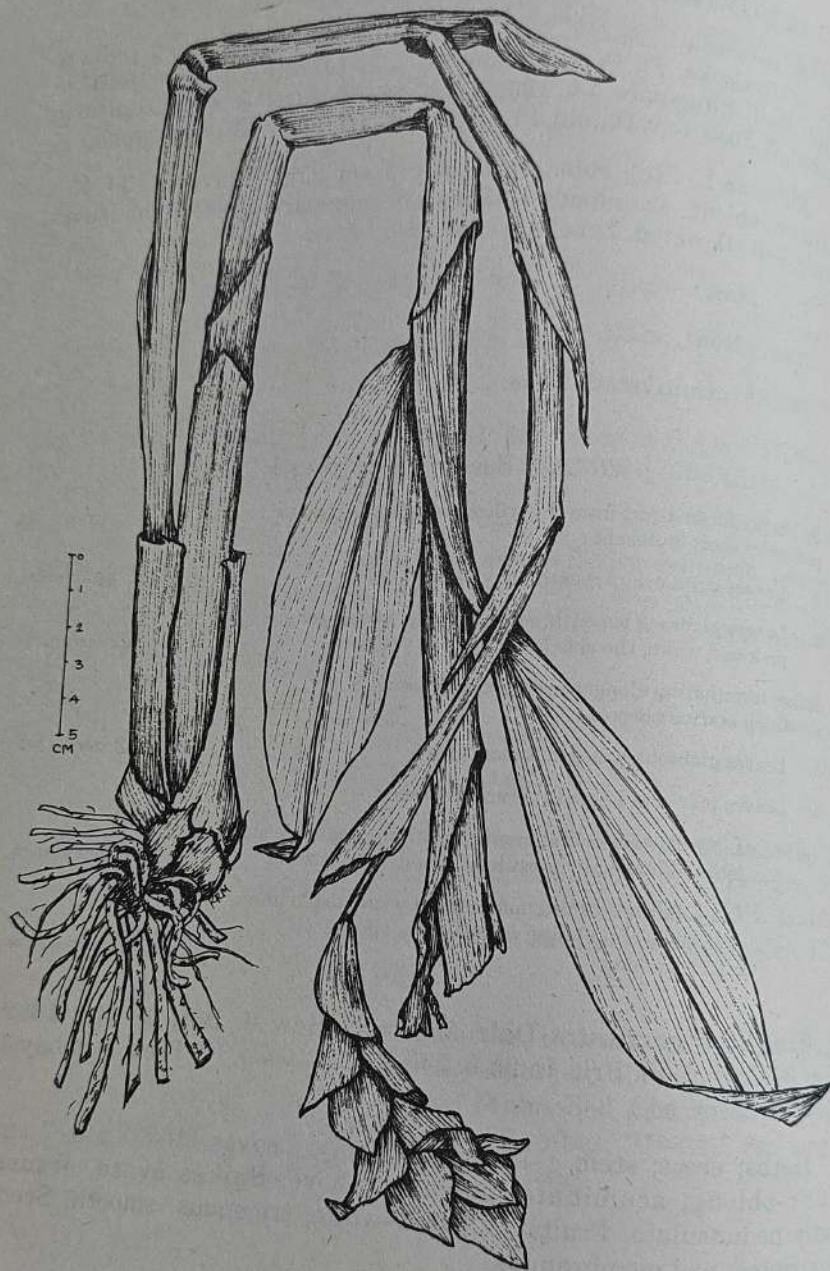
1. Spikes produced direct from the rootstock, short and dense; peduncles short or absent :
  2. Leaves pubescent beneath; lip yellow ... *Z. nimmonii*
  2. Leaves glabrous beneath; midlobe of lip variegated pink and white; the side lobes red and yellow ... *Z. cernuum*
1. Spikes terminating elongate peduncles beset with sheathing scarious bracts :
  3. Leaves glabrous beneath; bracts green ... *Z. zerumbet*
  3. Leaves pubescent beneath; bracts reddish :
    4. Lip yellowish-white, marked with purple lines; side lobes of lip small; capsule ellipsoid, c 2.5 cm long ... *Z. neesatum*
    4. Lip yellowish-white, not marked with purple lines; side lobes of lip large; capsule subglobose, c 1.75 cm long ... *Z. purpureum*

**Zingiber cernuum** Dalz. in Hook. Kew J. Bot. 4: 342. 1852; Baker in Hook. f. Fl. Brit. India 6: 245. 1892; Cooke, Fl. Pres. Bombay 3: 240. 1958 (Repr. ed.).

Herbs, erect; stem c 1.5 m tall, leafy. Leaves 20-30 x 5-7 cm, elliptic-oblong, acuminate, punctate above. Spikes ovate, obtuse, shortly pedunculate. Fruits yellowish-white, trigonous, smooth. Seeds red, striated, aril membranous.

Fls. & Frts. : July-October.

Illus. : Ramam. in Sald. & Nicols. Fl. Hassan Dt. 763, f. 113, B-Ba. 1976.



*Zingiber neesenum* (Grah.) Ramam.

*Distrib.*  
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*Z. nee*  
769. 1976.  
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f. *Fl. Brit.*  
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*Distrib.* : Ahmednagar; Chandrapur; Kolhapur; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

**Z. neesanum** (Grah.) Ramam. in Sald. & Nicols. Fl. Hassan Dt. 769. 1976. *Alpinia neesana* Grah. Cat. Pl. Bombay 207. 1839. *Zingiber macrostachyum* Dalz. in Hook. Kew J. Bot. 4: 342. 1852; Baker in Hook. f. Fl. Brit. India 6: 247. 1892; Cooke, Fl. Pres. Bombay 3: 241. 1958 (Repr. ed.). 'Nisam'.

Leafy stem reaching c 50 cm high, red, pubescent. Leaves sessile, 12.5–30.0 x 2.5–5.0 cm, lanceolate, acuminate. Flowers in long cylindric spikes, 15–30 cm long; corolla white or greenish-white. Capsules pubescent, red. Seeds dark purple, aril white, large.

*Fls. & Frts.* : July–September.

*Distrib.* : Ahmednagar; Bhandara; Pune (Cooke, *op.cit.*); Raigad; Satara; Sindhudurg.

**Z. nimmonii** (Grah.) Dalz. in Hook. Kew J. Bot. 4: 341. 1852; Baker in Hook. f. Fl. Brit. India 6: 244. 1892; Cooke, Fl. Pres. Bombay 3: 240. 1958 (Repr. ed.). *Alpinia nimmonii* Grah. Cat. Pl. Bombay 206. 1839.

Stems leafy, 1.2–1.5 m high, reddish-green. Leaves 15–30 x 5.0–7.5 cm, oblong-lanceolate, acuminate, base acute; petioles with long sheaths and a short truncate ligule. Flowers in shortly pedunculate, ovate or subglobose spikes; corolla reddish-yellow. Capsules ellipsoid.

*Fls. & Frts.* : July.

*Distrib.* : Konkan (Cooke, *op.cit.*); Pune.

**Z. purpureum** Rosc. in Trans. Linn. Soc. 8: 348. 1807; Burt & R.M. Smith in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 4: 474. 1983. *Z. cassumunar* Roxb. in Asiat. Res. 11: 347, t. 5. 1810; Baker in Hook. f. Fl. Brit. India 6: 248. 1890; Cooke, Fl. Pres. Bombay 3: 242. 1958 (Repr. ed.). *Z. montanum auct. non* (Koen.) Link ex Dietr. 1831; S.M. Almeida, Fl. Savantwadi 2: 28. 1990. 'Malabari-halad'.

Herbs; rootstock perennial, yellow inside; leafy stem 1.2–1.5 m tall. Leaves subsessile, 22.5–35.0 x 2–4 cm, lanceolate, acute, base lightly rounded. Inflorescence of spikes, 10–16 x 3.0–3.5 cm, fusiform or cylindric-ovoid. Corolla pale yellow. Capsules c 1.5 cm in diam., membranous. Seeds many, small, purple.

*Fls. & Frts.* : July–August.

*Distrib.* : Bombay; Sindhudurg (Cultivated for rhizomes-S.M. Almeida, *op. cit.*).

**Z. zerumbet** (L.) Rosc. ex J. E. Sm. Exot. Bot. 2: 103, t. 112. 1804; Baker in Hook. f. Fl. Brit. India 6: 247. 1892; Cooke, Fl. Pres. Bombay 3: 241. 1958 (Repr. ed.); Holtt. in Gard. Bull. Singapore 13: 59. f. 3. 1950; Burt & R.M. Smith in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 4: 495. 1983. *Amomum zerumbet* L. Sp. Pl. 1. 1753.

Herbs; rootstock large, hard, yellow inside; root-fibres vermiform; leafy stem 0.9–1.5 m high, cylindric. Leaves 20–30 x 5.0–7.5 cm, sessile, oblong-lanceolate or oblanceolate, acuminate, narrowed at base. Flowering stems 30–45 cm long, flexuous, clothed with long appressed obtuse sheaths. Flowers pale sulphur-yellow, in conico-oblong or ovoid-obtuse spikes, 7.5–10.0 x 5.0 cm. Capsules white, thin-walled, dehiscent, c 2.5 cm long, ellipsoid. Seeds c 0.6 cm long, oblong or ellipsoid, aril white, lacerate.

*Fls. & Frts.* : July.

*Illus.* : Wight, Ic. t. 2003. 1853; Holtt. *op.cit.*

*Distrib.* : Rare along edges of forests. Satara; Sindhudurg (S. M. Almeida, Fl. Savantwadi 2: 28. 1990).

#### CULTIVATED SPECIES :

**Z. officinale** Rosc. in Trans. Linn. Soc. 8: 348. 1807; Baker in Hook. f. Fl. Brit. India 6: 246. 1892; Cooke, Fl. Pres. Bombay 3: 242. 1958 (Repr. ed.); Burt & R.M. Smith in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 4: 498, f. 1c. 1783. 'Adrak', 'Ale', 'Sunt'.

Herbs; stems leafy, up to 2 m high, perennial. Leaves 10–25 x 1.5–2.0 cm, lanceolate to linear-lanceolate, sessile, narrowed to the base. Inflorescence 4–5 x 2 cm, ovoid.

*Illus.* : Burt & R.M. Smith in Dassan. & Fosb. *op.cit.*

*Distrib.* : Grown extensively in Ahmednagar; Nagpur; Osmanabad; Sindhudurg; Thane.

**Elettaria cardamomum** (L.) Maton in Trans. Linn. Soc. 10: 254, t. 5. 1811; Baker in Hook. f. Fl. Brit. India 6: 251. 1892; Cooke, Fl. Pres. Bombay 3: 251. 1958 (Repr. ed.); Burt in Manilal, Bot. Hist. Hort. Malab. 147. 1980. *Amomum cardamomum* L. Sp. Pl. 1. 1753. *Elettaria cardamomum* var *major* Baker in Hook. f. *op. cit.* 'Elachi', 'Elchi'.

Rootstocks woody or fleshy, branching; stem 1.8–2.7 m high, clothed below with spongy sheaths. Leaves subsessile, 30–60 cm long.

Panicles several to one leafy stem, 30–60 cm long. Capsules subglobose or oblong, c 1.2 cm long, marked with many fine vertical ribs.

*Distrib.* : Cultivated. Bombay.

# MARANTACEAE

1. Leaves 15–25 x 5.0–7.5 cm; flowers white, in short radical spikes

1. Leaves 30–45 x 15–20 cm; flowers purplish, in capitulate spikes, sessile on the side of the petiole above the middle

... STACHYPHRYNIUM

... PHRYNIUM

## PHRYNIUM Willd. (*nom. cons.*)

**Phrynium pubinerve** Bl. Enum. Pl. Jav. 1: 38. 1827. *P. capitatum sensu* Baker in Hook. f. Fl. Brit. India 6: 258. 1892 *non* Willd. 1797; Cooke, Fl. Pres. Bombay 3: 246. 1958 (Repr. ed.).

Rootstocks tuberous, root-fibres many, fleshy. Leaves oblong or oblong-lanceolate, acuminate, base rounded or cuneate, petioles 60–90 cm long, stout, terete; sheaths long, green. Spikes 3.7–5.0 cm in diam. Fruits c 1.2 x 1.2 cm, short-stalked, deep maroon, bearing scattered, fine hairs, somewhat 3-lobed, apex broad with a slight depression, bearing persistent sepals, 3-locular, 1–3-seeded. Seeds c 0.9 cm long, oblong, ripens black.

*Illus.* : Holtt. in Gard. Bull. Singapore 13: 287, f. 4. 1951. (*P. capitatum*).

*Distrib.* : Konkan (Cooke, *op. cit.*).

## STACHYPHRYNIUM K. Schum.

**Stachyphrynium spicatum** (Roxb.) K. Schum. in Engl. Pflanzenr. 4, 48: 46. 1902; Sant. in Rec. Bot. Surv. India 16 (1) : 277. 1967 (3rd Rev. ed). *Phrynium spicatum* Roxb. Fl. Ind. 1: 5. 1832; Baker in Hook. f. Fl. Brit. India 6: 259. 1892; Cooke, Fl. Pres. Bombay 3: 246. 1958 (Repr. ed.).

Rootstocks widely creeping, perennial. Leaves oblong, caudate-acuminate, base rounded; petioles slender, much longer than blade. Spikes 2.5–3.7 cm long; bracts c 2 cm long, ovate, green. Fruits 3-seeded. Seeds c 0.63 cm long, triquetrous, on the inner face, dull brown.

*Fls. & Frts.* : June–October.

*Distrib.* : Rare. in shady forests. Pune (Sant. *op.cit.*); Sindhudurg (S. M. Almeida, Fl. Savantwadi 2: 29. 1990).

**CULTIVATED SPECIES :**

*Calathea medio-picta* Makoy ex E. Morr. in Belg. Hortie. 24: 228. 1874; Bailey, Man. Cult. Pl. 294. 1949.

Herbs with short unbranched stem from rhizome. Leaves oblong to ovate-lanceolate, acuminate. Inflorescence strobilate or capitate to closely imbricating spiral bract and several flowers to each bract. Stamens purplish.

*Fls. & Frts.* : November–February.

*Distrib.* : Cultivated in gardens. Nagpur.

**MUSACEAE**

- |                             |     |        |
|-----------------------------|-----|--------|
| 1. Plants stoloniferous     | ... | MUSA   |
| 1. Plants not stoloniferous | ... | ENSETE |

**ENSETE Horan.**

*Ensete superbum* (Roxb.) Cheesm. in Kew Bull. 1947: 100. 1948; Sant. in Rec. Bot. Surv. India 16(1): 277. 1967 (3rd Rev. ed). *Musa superba* Roxb. Pl. Cor. t. 223. 1811 & Pl. Ind. 1: 667. 1832; Baker in Hook. f. Fl. Brit. India 6: 261. 1892; Cooke, Fl. Pres. Bombay 3: 247. 1958 (Repr. ed.). 'Chavan-kel', 'Chowani', 'Kawder', 'Rankel'.

Herbs, 3.0–3.6 m high; trunk narrow below leaves. Leaves 1.5–3.0 x 0.5–1.0 m, oblong, narrowed to base. Inflorescence of subterminal, stout spikes. Petals pale. Fruits oblong, subcoriaceous, c 7.5 x 3.7 cm, ripens dry. Seeds 0.7–1.2 cm in diam., numerous, subglobose, smooth, brown or black.

*Fls. & Frts.* : July–January.

*Illus.* : Wight, Ic. tt. 2017–18. 1853 (*Musa superba*).

*Distrib.* : Frequent on steep rocky slopes. Ahmednagar; Amaravati; Bombay; Kolhapur; Nasik; Pune; Raigad; Satara; Thane.

**MUSA L.**

- |                      |     |                    |
|----------------------|-----|--------------------|
| 1. Seeds smooth      | ... | <i>M. ochracea</i> |
| 1. Seeds tuberculate | ... | <i>M. rosacea</i>  |

**Musa**  
'Rankel'.

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**Musa ochracea** Shepherd in Kew Bull. 17: 461, f. 1. 1964.  
'Rankel'.

Pseudostems up to 3 m long, robust, ochreous, yellow-green. Leaves up to 2 m by one-third as wide, markedly truncate-elliptic; petioles slender, up to 70 cm long. Female flowers 15-20 in 2 rows. Male flowers up to 20 or more per bract in 2 rows. Fruits up to 6 x 2 cm, oblong-ovate-cylindrical, borne on stalks 3 cm long and sharply tapered above to slender, truncate, bottle necks c 1 cm long. Seeds c 0.35 cm in diam., rounded-angular, light brown.

*Illus.* : Shepherd. *op.cit.*

*Distrib.* : W. Ghats (Shepherd, *op. cit.*).

*Notes* : The type on which the description is based is a plant in the West Indies collection (I.R. 578) and is maintained both in Trinidad and Jamaica. Seeds came to the Banana board in Jamaica from plants growing at Poona Agricultural College. Unfortunately no locality can be reliably cited for the species in the wild. According to Shepherd (*op. cit.*) it may be a native of India or Pakistan, but such widely separated areas are suggested as Assam and the Western Ghats. So its occurrence in the wild in W. Ghats may be doubtful.

**M. rosacea** Jacq. Hort. Schoenb. 4: 22, t. 445. 1804; Baker in Hook. f. Fl. Brit. India 6:263. 1892; Cooke, Fl. Pres. Bombay 3: 247. 1958 (Repr. ed.). 'Jangli-kela'.

Stems slender, cylindric, 0.9-1.5 m high, 7.5-10.0 cm in diam.; roots perennial. Leaves linear-oblong, firm in texture, petiolate. Flowers in drooping or erect spikes reaching 15 cm long; bracts few-flowered, ovate, lilac or reddish. Fruits linear-oblong, slightly incurved, obscurely 4-5-angled. Seeds many, black.

*Distrib.* : Grows in almost inaccessible places on the sides of precipitous crags. Pune; Raigad; Ratnagiri.

#### CULTIVATED SPECIES :

**M. paradisiaca** L. Sp. Pl. 1043. 1753; Cooke, Fl. Pres. Bombay 3: 249. 1958 (Repr. ed.). *M. cliffortiana* L. Sp. Pl. 1043. 1753 in Syn. *M. sapientum* L. var. *paradisiaca* Baker in Ann. Bot. 7: 213. 1893 & in Hook. f. Fl. Brit. India 6:262. 1892. 'Kela'.

Herbs, 4-8 m tall with a diam. of 15 cm. Leaves 1-2 x 0.6 m, oblong, green. Inflorescence a terminal pendulous spike, 60-120 cm long. Flowers unisexual, 3.5-4.5 cm long, usually in 2 rows under each bract, those of lower bracts pistillate and of upper ones staminate. Fruits oblong, trigonous, ripens yellow; pulp sweet, edible. Seeds irregularly globose, black.

*Fls. & Frts.* : Throughout the year.

*Illus.* : Cheesm. in Kew Bull. 1948. opp. page 152, t. 1, f. 1. 1948.

*Distrib.* : Cultivated for fruit in almost all districts.

### HELICONIACEAE

#### CULTIVATED SPECIES :

***Heliconia angustifolia*** Hook. Bot. Mag. t. 4475. 1849; Cooke, Fl. Pres. Bombay 3: 250. 1958 (Repr. ed.).

Plants up to 1.2 m tall. Leaves 45–75 x 7.5–15.0 cm, green; petioles long, gracefully arching. Peduncles erect. Flowers yellowish-green, 6–10 in each red bract.

*Distrib.* : Grown in gardens as an ornamental. Pune.

*Note* : Native of Brazil.

***H. bihai*** L. Mant. 2: 211. 1767; Cooke, Fl. Pres. Bombay 3: 250. 1958 (Repr. ed.).

Plants 3.0–4.5 m tall. Leaves 0.9–1.5 m long, ovate or oblong-ovate, transversely ribbed; petioles long; blossom sheaths very large, scarlet and black. Flowers red or orange.

*Distrib.* : Grown as an ornamental. Pune.

*Note* : A native of West Indies.

### STRELITZIACEAE

#### CULTIVATED SPECIES :

***Ravenala madagascariensis*** J.F. Gmel. Syst. 567. 1791; Baker in Hook. f. Fl. Brit. India 6:198. 1890; Cooke, Fl. Pres. Bombay 3: 250. 1958 (Repr. ed.).

Trees, 6–12 m tall. Leaves distichous, large, 2–3 x 1.0–1.5 m, spreading out fan-wise. Flowers in compact clusters, each flower enclosed in a bract. Capsules woody. Seeds many, surrounded by a mass of bright blue or purple arils.

*Fls. & Frts.* : September.

*Distrib.* : Grown in gardens. Bombay; Pune; Satara.

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**CULTIVATED SPECIES :**

***Canna flaccida*** Rosc. In Trans. Linn. Soc. 8: 339. 1807; Sant. Fl. Purandhar 129. 1958. *C. indica* var. *flava* Rosc. Scit. Pl. t. 13. 1828; Baker in Hook. f. Fl. Brit. India 6: 261. 1892.

Plants 1.2–1.5 m tall. Leaves 25–60 x 10.0–12.5 cm, oblong-lanceolate. Racemes loose and few-flowered, simple with small bracts, erect. Flowers yellow, showy, soft or flaccid; staminal segments bright yellow.

*Fls. & Frts.* : May–December

*Distrib.* : Planted in gardens. Pune.

***C. indica*** L. Sp. Pl. 1. 1753; Cooke, Fl. Pres. Bombay 3: 251. 1958 (Repr. ed.); Bailey, Man. Cult. Pl. 291. 1949. *C. indica* var. *orientalis* (Rosc.) Baker in Hook. f. Fl. Brit. India 6: 260. 1892. '*Dev-kel*', '*Kardai*'.

Rootstocks tuberous with many fibers; stems 0.9–1.2 m high, erect. Leaves 15–45 x 10–20 cm, oblong or elliptic-lanceolate, caudate-acuminate. Flowers rather distant, 5.0–6.2 cm long, scarlet or yellow. Fruit erect, 1.2–2.5 cm long, subspherical, obscurely 3-lobed; testa crustaceous, black shining. Seeds black, globose.

*Fls. & Frts.* : Throughout the year.

*Distrib.* : Common in the gardens, becoming naturalised. Ahmednagar; Bhandara; Bombay; Chandrapur; Kolhapur; Nagpur; Osmanabad; Pune; Raigad; Satara; Sindhudurg; Thane.

***C. orchoides*** Bailey, Man. Cult. Pl. 291. 1949. '*Kardali*'.

Herbs, erect; rhizome perennial; aerial stem green, 0.5–1 m tall. Leaves 30–60 x 9–18 cm, broadly lanceolate, acuminate, sessile on long sheaths. Flowers in terminal spikes, large, showy, variously coloured red, rose, yellow or yellow with red or orange spots.

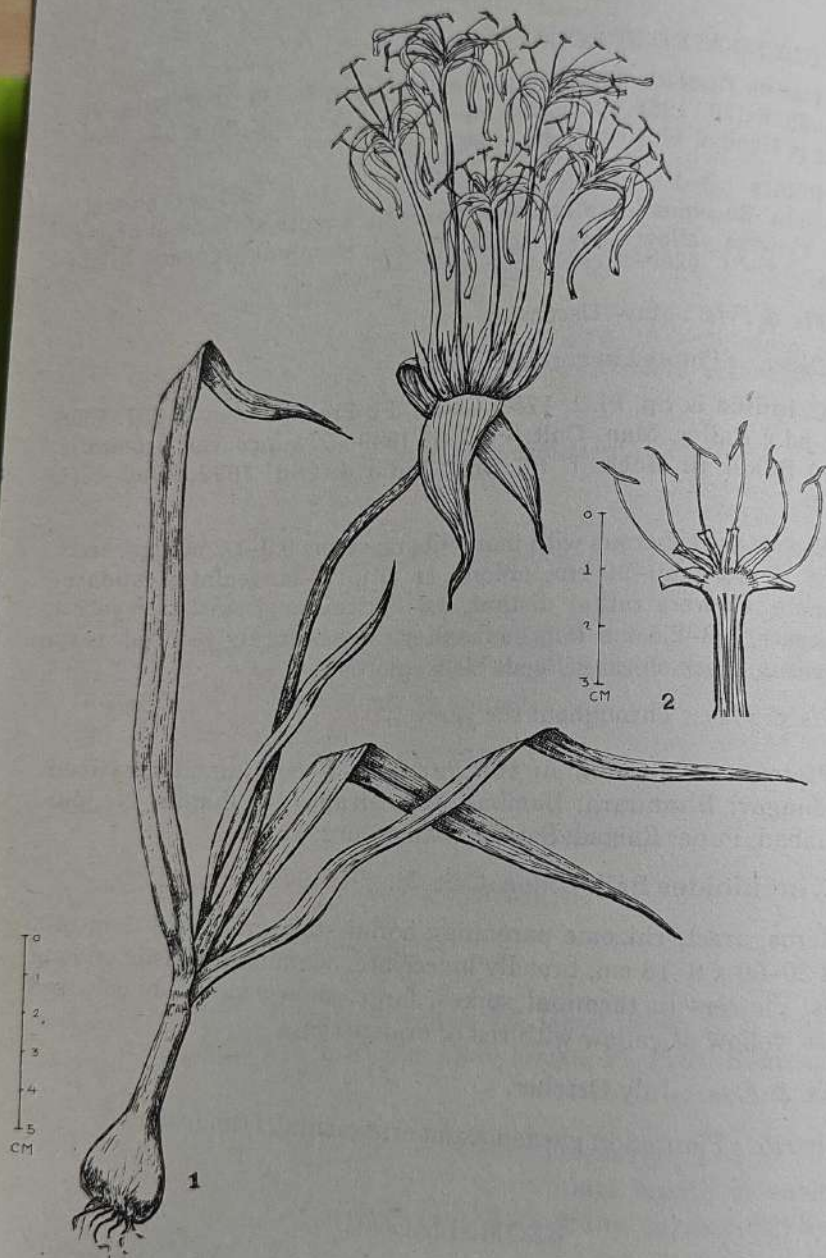
*Fls. & Frts.* : July–October.

*Distrib.* : Planted in garden as an ornamental. Osmanabad.

BROMELIACEAE

**CULTIVATED SPECIES :**

***Ananas comosus*** (L.) Merr. Interpr. Herb. Amboin. 133. 1917; S.M. Almeida, Fl. Savantwadi 2: 30. 1990. *Bromelia comosa* L. Herb.



*Crinum amoenum* Roxb. ex Ker-Gawl.  
1. Habit 2. Stamens

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Amb. 21. 1754. *Ananas sativus* Schultes f. in L. Syst. Veg. 7: 1283. 1830; Cooke, Fl. Pres. Bombay 3: 251. 1958 (Repr. ed.). '*Ananus*'.

Perennial, erect herb with a short stem bearing a rosette of leaves, 60-90 cm long, with prickly margins and spiny tips. Fruit has succulent flesh of yellow to light orange colour.

Fls. : January-March.

Distrib. : The pineapple, a native of Tropical America is cultivated along hedges in unirrigated lands. Sindhudurg (S.M. Almeida, *op. cit.*).

# AMARYLLIDACEAE

- |   |     |            |
|---|-----|------------|
| 1. Corona present, formed by expanded filaments | ... | PANCRATIUM |
| 1. Corona absent                                | ... | CRINUM     |

## CRINUM L.

- |   |     |                      |
|---|-----|----------------------|
| 1. Perianth funnel-shaped :                     |     |                      |
| 2. Perianth erect                               |     |                      |
| 2. Perianth nodding :                           | ... | <i>C. latifolium</i> |
| 3. Neck of bulb c 8 cm long; leaves ensiform    | ... | <i>C. eleonorae</i>  |
| 3. Neck of bulb indistinct; leaves strap-shaped | ... | <i>C. brachynema</i> |
| 1. Perianth salver-shaped :                     |     |                      |
| 4. Perianth-lobes linear :                      |     |                      |
| 5. Leaves deeply channelled                     | ... | <i>C. viviparum</i>  |
| 5. Leaves flat                                  | ... | <i>C. asiaticum</i>  |
| 4. Perianth-lobes lanceolate :                  |     |                      |
| 6. Flowers pedicelled                           | ... | <i>C. woodrowii</i>  |
| 6. Flowers subsessile :                         |     |                      |
| 7. Apex of leaves acuminate                     | ... | <i>C. amoenum</i>    |
| 7. Apex of leaves obtuse or subacute            | ... | <i>C. pratense</i>   |

**Crinum amoenum** Roxb. ex Ker. -Gawl. in J. Sci. Arts London 3: 106. 1817; Hook. f. Fl. Brit. India 6: 282. 1892.

Bulbs globose, 5.0-7.5 cm in diam. Leaves 10-12, 45-60 x 2.5-3.7 cm, suberect, ensiform, tapering from base, bright green. Scapes 30-60 cm long, slender, subcylindric. Inflorescence umbellate, 6-12-flowered. Spathes 5 cm long, lanceolate. Perianth white, tube green. Fruits subglobose, membranous.

Distrib. : Pune; Thane.

**C. asiaticum** L. Sp. Pl. 292. 1753; Hook. f. Fl. Brit. India 6: 280. 1893; Cooke, Fl. Pres. Bombay 3: 256. 1958 (Repr. ed.). 'Nagdaun'.

Bulbs 5–10 cm across, narrowed into a neck, 15–30 cm long. Leaves 20–30, thin, 0.9–1.5 m long, 12.5–17.5 cm wide, linear-lanceolate, shortly acuminate, with a sheathing base, margins smooth. Scapes 10–16 cm long. Flowers white, 15–50 in an umbel; perianth tube 8–9 cm long, lobes 6, equalling tube; stamens 6, reddish. Capsules 2.5–5.0 cm in diam., subglobose, 1–2-seeded, beaked by fleshy base of perianth, dehiscing irregularly.

*Fls. & Frts.* : May–September.

*Illus.* : Wight, Ic. tt. 2021–2022. 1853 (*C. toxicarium* Roxb. Fl. Ind. 2: 134. 1832); Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 732. 1982.

*Distrib.* : Ahmednagar; Bombay; Osmanabad; Pune; Satara; Thane; Yavatmal.

**C. brachynema** Herb. in Bot. Reg. Misc. 36. 1842; Hook. f. Fl. Brit. India 6: 284. 1892; Cooke, Fl. Pres. Bombay 3: 258. 1958 (Repr. ed.).

Bulbs 6.2–7.5 cm in diam., ovoid. Leaves 45–60 x 7.5–10.0 cm, bright-green, moderately firm, margin entire. Scapes c 30 cm high, subterete. Flowers pedicellate, 15–20 in an umbel; perianth-tube greenish, lobes 6, white, oblanceolate; stamens 6. Capsules subglobose.

*Fls. & Frts.* : May.

*Distrib.* : Bombay; Satara (Cooke, *op.cit.*).

*Notes* : According to Cooke (*op.cit.*), this species is common along hills in open situations. However it has not been collected since then.

**C. eleonora** Blatt. & McC. in J. Bombay nat. Hist. Soc. 32: 733. 1928.

1. Perianth segments broadly lanceolate, white; bracts green with a purple tinge

1. Perianth segments oblanceolate, deep purple on dorsal side; bracts brownish-purple tinged

... f. *eleonora*

... f. *purpurea*

**f. eleonora.**

Bulbs ovoid-spherical, c 20 x 13 cm. Leaves c 60 x 5 cm. Scapes cylindrical, slightly compressed, c 50 cm long, green with a purple tinge. Flowers white, fragrant; bracts broadly lanceolate; bracteoles linear; perianth tube c 6.5 cm long, 4-angled.

*Fls.* : April–May.

*Illus.* : Sharma & Kulkarni in Nayar & Sastry, Red Data Book Ind. Pl. 1: 23, f. 1987.

*Distrib.* : Rare on open hill-sides and along both sides of the river before Yenna falls, Lingmala, Mahabaleshwar, Satara (Blatt. & McC. *op.cit.*).

*Note* : Worth introducing in gardens.

f. *purpurea* Blatt. & McC. in J. Bombay nat. Hist. Soc. 32: 734. 1928.

*Fls.* : April–May.

*Distrib.* : Satara (Blatt. & McC. *op.cit.*).

*C. latifolium* L. Sp. Pl. 291. 1753; Hook. f. Fl. Brit. India 6: 283. 1892; Cooke, Fl. Pres. Bombay 3: 258. 1958 (Repr. ed.).

1. Leaf-margins slightly scabrous; flowers white, streaked or tinged with purple down middle; anthers grey ... var. *latifolium*
1. Leaf-margins smooth, undulate; flowers pinkish; anthers brown ... var. *zeylanica*

var. *latifolium*.

Bulbs large, subglobose, 12.5–15.0 cm in diam.; neck short, stout. Leaves numerous, 60–90 x 7.5–12.5 cm, lorate, acuminate, bright-green. Scape inserted on the neck of the bulb, c as long as the leaves. Flowers fragrant, in 10–20-flowered umbels; perianth-tube 7.5–15.0 cm long, curved, cylindric. Fruits subglobose, 3.7–5.0 cm in diam.

*Fls. & Frts.* : April–June.

*Illus.* : Wight, Ic. tt. 219–220. 1841; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 732. 1982.

*Distrib.* : Amaravati; Bombay; Kolhapur; Pune; Ratnagiri; Satara; Sindhudurg.

var. *zeylanica* (L.) Herb. Amaryllid. 262.1837; Cooke, Fl. Pres. Bombay 3: 258. 1958 (Repr. ed.). *C. zeylanicum* L. Syst. Nat. ed. 12, 2: 236. 1767.

Bulbs 15–20 cm in diam. Leaves fewer, narrower, 3.7–5.0 cm wide, shorter.

*Fls.* : July.

*Distrib.* : Wild in Konkan (Cooke, *op. cit.*).

**C. pratense** Herb. Amaryllid. 256. 1837; Hook. f. *Fl. Brit. India* 6: 282. 1892; Cooke, *Fl. Pres. Bombay* 3: 257. 1958 (Repr. ed.); Shah & Badrinath in *J. Econ. Tax. Bot.* 6: 137. 1985.

Bulbs 10.0–12.5 cm in diam., neck 5.0–6.2 cm long. Leaves 45–60 cm long, linear, narrowed towards obtuse or subacute apex, channelled down the face, margins entire or ciliate. Scape lateral, compressed, 30 cm or more long and c 1.2 cm in diam. Flowers fragrant, 6–12 in an umbel; perianth-tube greenish, 7.5–10.0 cm long, lobes white. Capsules 2.5–4.0 cm across, subglobose,

*Fls. & Frts.* : October–December.

*Distrib.* : Thane (Shah & Badrinath, *op. cit.*).

**C. viviparum** (Lam.) R. Ansari & V.J. Nair in *J. Econ. Tax. Bot.* 11: 205. (1987) 1988. *Amaryllis vivipara* Lam. *Encycl.* 1: 123. 1783. *Crinum defixum* Ker.-Gawl. in *J. Sci. Arts London* 3: 105. 1817; Hook. f. *Fl. Brit. India* 6: 281. 1892; Cooke, *Fl. Pres. Bombay* 3: 257. 1958 (Repr. ed).

1. Leaves with obtuse or acute apex

1. Leaves gradually acuminate

... var. *viviparum*

... var. *ensifolium*

var. *viviparum*. 'Kumbaya', 'Plykand'

Bulbs 5.0–7.5 cm in diam., ovoid; neck 5–15 cm long, cylindric. Leaves 60–90 x 2.0–2.5 cm, linear, coriaceous, scaberulous. Scapes 45–75 cm long, cylindric. Flowers white, in 6–12-flowered umbels; perianth tube 7–8 cm long, green; filaments purple. Capsules 2.5–3.7 cm in diam., subglobose, beaked by perianth tube. Seeds rugose.

*Fls. & Frts.* : June–October.

*Illus.* : Lakshminarasimhan & Sharma, *Fl. Nasik Dt.* 561, photo & f. 32. 1991 (*Crinum defixum*).

*Distrib.* : Akola; Amaravati; Bhandara; Chandrapur; Nasik; Osmanabad; Pune; Ratnagiri; Satara; Sindhudurg; Thane; Yavatmal.

var. *ensifolium* (Roxb.) A. Ansari & V.J. Nair in *J. Econ. Tax. Bot.* 11: 205. (1987) 1988. *C. ensifolium* Roxb. *Fl. Ind.* 2: 129. 1832; Hook. f. *Fl. Brit. India* 6: 281. 1892. *C. defixum* var. *ensifolium* (Roxb.) Baker, *Handb. Amaryllid.* 76. 1888; C.E.C. Fischer in Gamble, *Fl. Pres. Madras* 1504. 1928 [3: 1051. 1957 (Repr. ed.)].

Bulbs ovoid. Leaves erect, 30-45 x 2.5-3.7 cm, ensiform. Scapes 3.7-5.0 cm long, rather slender. Umbels 10-12-flowered. Perianth white, tube c 8.7 cm, rather longer than linear lobes which are c as long as stamens. Fruits c 2.5 cm across, subglobose.

*Fls. & Frts.* : August-October.

*Distrib.* : Banks of Deccan rivers (Hook. f. *op. cit.*); Thane.

**C. woodrowii** Baker in Bot. Mag. t. 7597. 1898; Cooke, Fl. Pres. Bombay 3:257. 1958 (Repr. ed).

Bulbs globose, c 10 cm in diam. Leaves c 30.0 x 7.5-10.0 cm, few, linear, obtuse, bright-green. Scape arising from bulb outside tuft of leaves, stout, compressed, c 30 cm long. Umbels 6-7-flowered. Perianth-tube 7.5-8.7 cm long, cylindric, greenish, lobes white, as long as tube; filaments bright-red; styles longer than stamens.

*Fls.* : May-June.

*Distrib.* : Satara (Cooke, *op. cit.*).

#### PANCRATIUM L.

- |   |     |                          |
|---|-----|--------------------------|
| 1. Bulbs without a neck                 | ... | <i>P. triflorum</i>      |
| 1. Bulbs with a neck :                  |     |                          |
| 2. Perianth-tube short, 2.0-2.5 cm long | ... | <i>P. sanctae-mariae</i> |
| 2. Perianth-tube much longer :          |     |                          |
| 3. Perianth-tube 12.5-15.0 cm long      | ... | <i>P. longiflorum</i>    |
| 3. Perianth-tube 7.5-12.5 cm long :     |     |                          |
| 4. Scapes stout, c 10 cm long           | ... | <i>P. donaldii</i>       |
| 4. Scapes slender, 15-30 cm long        | ... | <i>P. parvum</i>         |

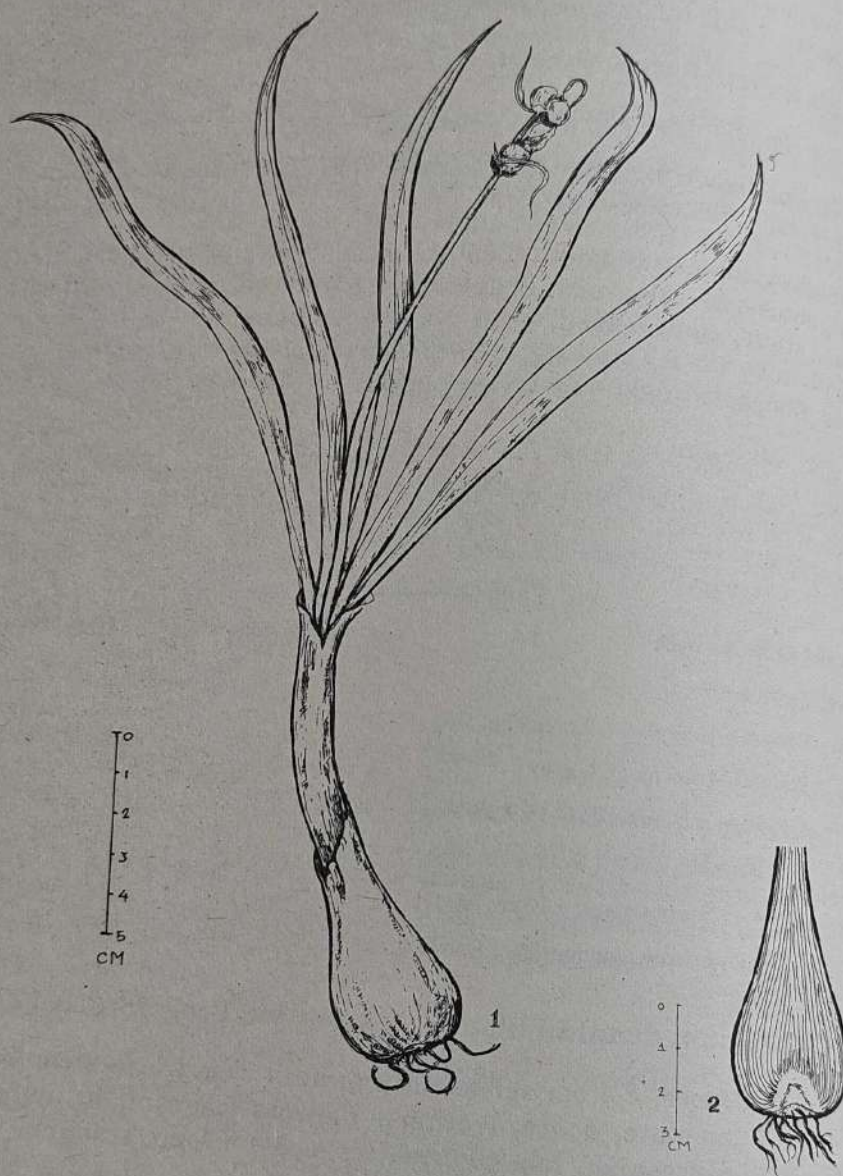
**Pancratium donaldii** Blatt. in J. Asiat. Soc. Beng. 26: 350. 1930.

Bulbs globose, c 4 cm across, brown, neck cylindric, c 3 cm long. Leaves 2, lanceolate, acute, leathery. Flowers fragrant, in umbels; perianth-tube greenish, lobes lanceolate, c 3 cm long; staminal cup trigonous with 6 longitudinal ribs; styles filiform.

*Fls.* : June.

*Distrib.* : Rare. Satara.

**P. longiflorum** Roxb. Fl. Ind. 2: 125. 1832; Hook. f. Fl. Brit. India. 6: 286; 1892; Kamble *et al.* in J. Econ. Tax. Bot. 3: 812. (1982) 1983.



*Pancratium parvum* Dalz.  
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Fls. : Ju

Distrib.

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India 6: 286

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'Pachanka

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terminal.  
Capsules  
many, bla

Fls. .

Illus

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flowers,

Herbs; bulbs 3-5 cm in diam., globose, neck up to 2 cm long, cylindric. Leaves 2-4 at the time of flowering, 20-35 x 1.0-1.8 cm, narrowly lanceolate. Scapes 15-19 x 1.0-1.3 cm, compressed, shorter than leaves, 1 or 2-flowered; spathe single. Perianth-tube green, throat obconic, lobes 5 cm long, white, lanceolate; staminal cup above 2.5 cm long with bifid teeth between filaments.

*Fls.* : June.

*Distrib.* : Rare. Akola.

*Notes* : Hook. f. (*op.cit.*) gives its distribution as Deccan Peninsula and Central India but there is no mention of this species in Cooke's Flora of Presidency of Bombay. Kamble *et al.* (*op. cit.*) have reported this species for Maharashtra.

**P. parvum** Dalz. in Kew J. Bot. 2: 144. 1850; Hook. f. Fl. Brit. India 6: 286. 1892; Cooke, Fl. Pres. Bombay 3: 260. 1958 (Repr. ed.).

Bulbs globose, c 4-5 cm across. Leaves 15-20 x 0.5-2.0 cm, linear-lanceolate. Flowers white, in terminal umbels; perianth-tube dilated above, lobes 6, linear, c 2.5 cm long; staminal cup 12-toothed. Capsules ovoid, 3-lobed.

*Fls. & Frts.* : June-August.

*Distrib.* : Bombay; Nasik; Pune; Satara; Thane.

**P. sanctae-mariae** Blatt. & Hallb. in J. Indian Bot. Soc. 2: 52, f. 5. 1922; Sant. in Rec. Bot. Surv. India 16(1): 279. 1967 (3rd Repr. ed.). 'Pachankanda'.

Herbs, perennial; bulbs 3.5-6.0 cm in diam., tunicated. Leaves 15-20 x 1-2 cm, lanceolate. Scapes 10-15 cm long. Umbels simple, terminal. Flowers white; perianth lobes lanceolate, 2.0-2.5 x 0.2-0.3 cm. Capsules c 1 cm long, obovoid, 3-angled, loculicidally 3-valved. Seeds many, black.

*Fls. & Frts.* : May-June.

*Illus.* : Blatt. & Hallb. *op. cit.*

*Distrib.* : Rare. Nasik; Pune.

**P. triflorum** Roxb. Fl. Ind. 2: 126. 1832; Hook. f. Fl. Brit. India 6: 285. 1892; Cooke, Fl. Pres. Bombay 3: 259. 1958 (Repr. ed.).

Bulbs globose, 3.7-5.0 cm in diam. Leaves thin, arising with flowers, 20-45 x 1.2-2.5 cm, lanceolate or linear-lanceolate, acute.

Scape slender, 15.0–22.5 cm long. Flowers fragrant, 3–8 in an umbel; perianth-tube 3.7–5.0 cm long; Staminal cup with bifid teeth between short filaments. Fruits 3-angled, ovoid.

*Fls. & Frts.* : April–June.

*Illus.* : *P. verecundum* sensu Wight, Ic. t. 2023. 1853 non Ait. 1781; Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 611. 1988.

*Distrib.* : Bombay; Deccan (Cooke, *op. cit.*); Satara; Sindhudurg; Thane.

### CULTIVATED SPECIES :

***Eucharis grandiflora*** Planch. & Linden in Fl. de Serres 1, 9: 255. 1853-54; Bailay, Man. Cult. Pl. 256. 1949.

Bulbs 4–5 cm in diam. Leaves few (-3) to each stem, 17–27 x 8–12 cm, elliptic or ovate, thin, apex acuminate; petioles slender, 12–23 cm long. Scapes 52–58 cm long, bearing 4–6 flowers in umbels on 1.5–3.0 cm long pedicels. Flowers 9–10 cm across; perianth tube 4–5 cm long; tepals white, c 3.0 x 4.5 cm, ovate; staminal cup yellowish-green inside, protruded and prominent, 1.5 cm long; ovary c 1.0 x 0.5 cm. Fruits c 1 cm across, globose-triangular.

*Fls. & Frts.* : December–January.

*Illus.* : Bailey, Stand. Cyclop. Hort. 1160, f. 1432. 1953.

*Distrib.* : Planted in gardens. Pune.

*Note* : The 'Amazon Lily' is a native of Colombia. It is planted for its beautiful fragrant flowers.

***Furcraea foetida*** (L) Haw. Syn. Pl. Succ. 73. 1812; Backer & Bakh. f. Fl. Java 3: 165. 1968. *Agave foetida* L. Sp. Pl. 323. 1753. *Furcraea gigantea* Vent. in Bull. Sci. Soc. Philom. Paris 1: 65. 1793; Cooke, Fl. Pres. Bombay 3: 262. 1958 (Repr. ed.).

Shrubs, perennial, stout; stems c 1 m tall. Leaves up to 220 x 25 cm, lanceolate, spreading, thick, fleshy, crowded along the short stem. Inflorescence a terminal scape up to 13 m tall, with whorls of horizontal branchlets, each subtended by foliaceous bracts. Flowers bisexual, pendulous, sessile, yellowish-green, 3–4 cm across. Capsules loculicidal, 3-sided, up to 5 cm long. Seeds numerous, compressed.

*Fls. & Frts.* : August–December.

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*Illus.* : Gandhi in Sald. & Nicols. Fl. Hassan Dt. 802, f. 119A-Ab. 1976; Matthew, *Illus. Fl. Tamilnadu Carnatic 2*; t. 736, 1982.

*Distrib.* : Planted in almost all districts.

**Hymenocallis tenuiflora** Herb. App. 44. 1821; Naik, Fl. Osmanabad 330. 1979.

Herbs, perennial; bulbs 5-8 cm in diam.; neck stout, long. Leaves 45-60 x 2.0-2.5 cm, sword-shaped, linear-oblong, apex obtuse or subacute. Scapes 45-75 cm tall, compressed, stout, with 6-10 flowers in simple umbels. Perianth white, tube 10-15 cm long, lobes 6-9 cm long, decurved.

*Fls.* : August-September.

*Distrib.* : A native of America, cultivated in gardens. Osmanabad.

**Zephyranthes ajax** Spr.; Bailey, Man. Cult. Pl. 254. 1949.

Herbs. Leaves 20 cm long. Flowers pale yellow, c 3 cm across on 15-20 cm long scapes. Capsules globose.

*Distrib.* : Planted. Pune.

*Note* : It's a hybrid between *Z. citrina* Baker and *Z. candida* Herb.

**Z. carinata** Herb. in Bot. Mag. 52: t. 2594. 1825. *Z. grandiflora* Lindl. Bot. Mag. t. 902. 1824; Bailey, Man. Cult. Pl. 254. 1949; Naik, Fl. Osmanabad 329. 1979.

Bulbs c 2.5 cm in diam. Leaves c 30 cm long, linear. Flowers red or pink on a pedicel shorter or longer than coloured spathe; perianth 5-7 cm long, segments 1.2-2.0 cm broad, obovate, obtuse.

*Fls.* : May-July.

*Distrib.* : Planted in gardens. Osmanabad; Pune.

*Notes* : A native of Mexico.

**Z. rosea** Lindl. in Bot. Reg. 10: t. 821. 1824; Duthie, Fl. Upp. Gang. Pl. 3: 249. 1920 [2: 321. 1960 (Repr. ed.)].

Bulbs globose, c 2 cm thick. Spathe 2-fid at tip only. Flowers rose colored, c 3.7 cm across.

*Distrib.* : Cultivated in gardens. Pune.

## HYPOXIDACEAE

1. Fruits opening at top as a circumscissile or 3-valved capsules; ovary not produced above the crown into a stipe ...
1. Fruits indehiscent; ovary produced into a short or long stipe above the crown ...

HYPOXIS

CURCULIGO

## CURCULIGO Gaertn.

*Curculigo orchioides* Gaertn. Fruct. 1: 63, t. 13. 1788; Hook. f. Fl. Brit. India 6: 279. 1892; Cooke, Fl. Pres. Bombay 3: 255. 1958 (Repr. ed.); Nasir & Ali in Nasir, Fl. Pak. 134: 5, f. 1, H. & I. 1980. 'Kajuri'.

Herbs, 10–35 cm tall, erect, perennial; rootstock stout, short or elongate, root-fibres copious, fleshy. Leave sessile or petiolate, 15–45 x 1.2–2.5 cm, linear or linear-lanceolate, membranous, plicate, base sheathing. Inflorescence of small racemes, upper staminate, lower hermaphrodite. Flowers bright-yellow. Capsules c 1.2 cm long, hypogaeous, 1–4-seeded with a slender beak; septa spongy. Seeds oblong; testa deeply grooved in wavy lines, black.

*Fls. & Frts.* : June–October.

*Illus.* : Wight, Ic. t. 2043 A, f. 1. 1853 (*C. malabarica*); Nasir & Ali in Nasir, *op. cit.*; Matthew, *Illus. Fl. Tamilnadu Carnatic* 2: t. 733. 1982.

*Distrib.* : Common in all districts.

## HYPOXIS L.

*Hypoxis aurea* Lour. Fl. Cochinch. 200. 1790; Hook. f. Fl. Brit. India 6: 277. 1892; Cooke, Fl. Pres. Bombay 3: 254. 1958 (Repr. ed.); Nasir & Ali in Nasir, Fl. Pak. 134: 3, f. 1. F & G. 1980.

Herbs, 5–30 cm tall, perennial; rootstock subglobose or elongate and erect. Leaves 6–12, 10–35 x 0.2–0.5 cm, narrowly linear, subcoriaceous, acute, keeled. Scapes 1–4, filiform, 2.5–10.0 cm long, 1 (rarely 2)-flowered. Flowers yellow. Capsules 0.6–1.2 cm long, oblong or clavate-oblong, walls thin. Seeds black, finely tuberculate.

*Fls. & Frts.* : May–November.

*Illus.* : Fyson, Fl. Nilgiri Pulney Hill tops 3: t. 531. 1920 (Repr. ed. 1975); Nasir & Ali in Nasir, *op. cit.*

*Distrib.* : Ahmednagar; Buldhana; Dhule; Kolhapur; Nasik; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

## CULTIV

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**CULTIVATED SPECIES:**

**Molineria capitulata** (Lour.) Herb. Amaryllid. 84. 1837.  
*Leucojum capitulatum* Lour. Fl. Cochinch. 199. 1790. *Curculigo recurvata* Dryand. in Ait. Hort. Kew. ed. 2, 2: 253. 1811; Hook. f. Fl. Brit. India 6: 278. 1892; Cooke, Fl. Pres. Bombay 3: 255. 1958 (Repr. ed.).

Rhizomes elongate. Leaves 60–90 x 7.5–15.0 cm, lanceolate, plicate; petioles c 30 cm long. Scapes 7.5–22.5 cm long, stout. Flowers yellow in heads, 5–10 cm in diam. Berries 0.63–0.75 cm in diam., globose, hairy.

*Fls. & Frts.* : July–August.

*Distrib.* : Occasionally grown in gardens. Pune; Satara.

**AGAVACEAE**

**DRACAENA** Vandelli ex L.

**Dracaena terniflora** Roxb. Fl. Ind. 2: 159. 1832; Hook. f. Fl. Brit. India 6: 328. 1892; Cooke, Fl. Pres. Bombay 3: 272. 1958 (Repr. ed.).

Herbs or undershrubs c 1.5 m tall, straggling. Leaves (including the petioles) 20–30 x 4.5–6.2 cm, somewhat crowded, elliptic-lanceolate, acute or acuminate, thinly coriaceous, narrowed into the petiole. Flowers white, often 2–3-together on the rachis of a usually simple raceme, 10–20 cm long. Fruit a red globose berry, 0.6–0.8 cm across, smooth, glossy, 1-seeded.

*Fls. & Frts.* : April–October.

*Illus.* : Wight, Ic. t. 2054. 1853 (*D. terminalis*); Gandhi in Sald. & Nicols. Fl. Hassan Dt. 802, f. 119 C. 1976.

*Distrib.* : Bombay; Kolhapur; Ratnagiri; Sindhudurg.

**CULTIVATED SPECIES:**

**D. draco** L. Syst. ed. 12, 246. 1767; Bailey, Man. Cult. Pl. 241. 1949.

Arborescent, 18 m high, branched. Leaves many, crowded, erect or recurved, 45–60 x 3.0–4.5 cm, glaucous, linear-lanceolate, scarcely narrowed at base, long-attenuate at apex. Flowers greenish, in terminal panicles. Berries orange, ovoid.

*Fls. & Frts.* : September.

*Distrib.* : Cultivated. Bombay; Kolhapur.

*D. fragrans* (L.) Ker. -Gawl. in Curtis, Bot. Mag. t. 1081. 1808; Bailey, Man. Cult. Pl. 241. 1949. *Aletris fragrans* L. Sp. Pl. ed. 2, 456. 1762.

A small-sized arborescent perennial, 5-6 m tall. Leaves sessile, crowded, linear-lanceolate or linear-oblongate. Flowers fragrant, white with pink lines. Berries globose, 1-seeded.

*Fls. & Frts.* : August-September.

*Distrib.* : Grown in gardens. Bombay (Shinde, 1993).

*Agave americana* L. Sp. Pl. 323. 1753; Bailey, Man. Cult. Pl. 239. 1949.

var. *americana*.

Undershrubs. Leaves in a rosette, 0.9-1.8 m long and 15-20 cm broad, oblong-lanceolate, grey, prickly on the edges. Flowers yellowish-green, in a bracteate scape or stalk, 6-12 m tall, c 6.2 cm across. Fruits oblong-clavate.

*Fls. & Frts.* : October-December.

*Distrib.* : Cultivated or naturalised in plains. Buldhana; Dhule; Kolhapur; Ratnagiri; Sindhudurg; Thane; Yavatmal.

var. *variegata* Hook. in Curtis Bot. Mag. t. 3654. 1839; Cooke, Fl. Pres. Bombay 3: 261. 1958 (Repr. ed.); Bailey, Man. Cult. Pl. 239. 1949. '*Latia-Guial*'.

Leaves dark green and yellow, twisted.

*Distrib.* : Naturalised. Bhandara.

*A. angustifolia* Haw. Syn. Pl. Succ. 72. 1812; Sant. Fl. Purandhar 131. 1958. *A. wightii* Drumm. & Prain in Agric. Ledg. 13: 91. 1906; Cooke, Fl. Pres. Bombay 3: 261. 1958 (Repr. ed.). '*Chota-Guial*'.

Stems 10-40 cm high, erect or ascending, with offsets below; rosette dense with numerous leaves, c 1 m. Leaves stiffly spreading, 50-90 cm long, 7.5 cm broad in the middle, sword-shaped, linear; terminal spine subulate-conical, c 1.8 cm long, black; marginal spines blackish-brown, red when young. Inflorescence c 3m long, panicles elongate-pyramidal, 20-90 cm long, loose. Flowers c 5 cm long.

*Fls.* : January-June.

*Distrib.* : Widely naturalised. Bombay (Cooke, *op. cit.*); Pune; Satara (Cooke, *op. cit.*).

*Note* : Believed to be a native of St. Vincent (W. Indies).

**A. cantula** Roxb. Fl. Ind. 2: 167. 1832; Cooke, Fl. Pres. Bombay 3: 261. 1958 (Repr. ed.). *A. americana sensu* Hook. f. Fl. Brit. India 6: 277. 1892 non L. 1753. 'Chota Guial', 'Guial'.

Undershrubs, stout, scapigerous, perennial; stems short, woody. Leaves c 1 m long, patent, recurved, remotely spinescent-dentate. Flowers greenish, in terminal umbels; perianth-lobes 6, constricted in the middle; stamens 6, exserted.

*Fls. & Frts.* : July–November.

*Distrib.* : Naturalised. Ahmednagar; Akola; Bombay (Cooke, *op. cit.*); Chandrapur; Kolhapur; Pune; Satara; Sindhudurg; Thane.

*Note* : Probably introduced from Central America via the Philippines in the 17th century.

**A. ingens** Berger, Hort. Mort. 12: 360. 1912; Sant. in Rec. Bot. Surv. India 16(1): 318. 1953 [280. 1967 (3rd Rev. ed.)].

Rosettes large; leaves 30–40, elegantly curved upwards, c 2 m long, lanceolate, long tapering, dark green, c 35 cm wide at the base; terminal spine subulate, 4–5 cm long. Inflorescence 10 m high.

*Distrib.* : Naturalised. Pune.

*Note* : A native of Mexico.

**A. sisalana** Perrine in U. S. Senate Document 300:36. 1838; Cooke, Fl. Pres. Bombay 3: 261. 1958 (Repr. ed.); S.M. Almeida, Fl. Savantwadi 2:33. 1990. *A. rigida* Mill. var. *sisalana* Woodr. in J. Bombay nat. Hist. Soc. 12: 522. 1899.

Stems c 3.8 cm high. Leaves c 60 x 4 cm, becoming green, with shallow-grooved spine and typically no prickles. Inflorescence ample. Flowers 4.5–6.2 cm across.

*Fls.* : January–March.

*Distrib.* : It has been imported from Central America and West Indies between 1885 and 1892, and grown on a small scale in the Bombay Presidency; Sindhudurg (occasionally found in cultivation in gardens—S.M. Almeida, *op. cit.*).

**A. vera-cruz** Mill. Gard. Dict. ed. 8: 7. 1754; Cooke, Fl. Pres. Bombay 3: 261. 1958 (Repr. ed.). '*Kektad*'.

Undershrub; stems short. Leaves linear-oblong, many from short, stout trunk hidden by thickened leaf-bases. Flowers in pairs. Fruits oblong-cylindric.

*Fls. & Frts.* : November-May.

*Distrib.* : Commonly naturalised and planted as a hedge. Amaravati; Kolhapur; S. Maratha-along railway line (Cooke, op. cit.); Nagpur; Osmanabad; Sindhudurg.

*Note* : Probably a native of Mexico.

**Molina recurvata** (Lam.) Hemsl. in Biol. Centre Arn. Bot. 31: 372. 1884. *Beaucarnea recurvata* Lam. Ill. Hort. Misc. 54. 1861.

Small-sized, evergreen trees, 5-6 m tall. Leaves linear, tapering to a fine point. Inflorescence of much branched panicles. Flowers creamy white. Fruits 3-angled.

*Distrib.* : Rare in Victoria Garden, Bombay (Shinde, 1993).

**Polianthes tuberosa** L. Sp. Pl. 316. 1753; Cooke, Fl. Pres. Bombay 3: 260. 1958 (Repr. ed.); Bailey, Man. Cult. Pl. 239. 1949. '*Gulchabu*', '*Nishigandha*'.

Tubers bulb-shaped; stems 60-100 cm tall, simple. Leaves radical or on the lower part of the stem, 20-30 cm long. Flowers white, fragrant, in long terminal simple racemes. Capsules bearing the persistent perianth on top. Seeds flat.

*Fls. & Frts.* : April-June.

*Distrib.* : Grown as ornamental. Ahmednagar; Chandrapur; Nagpur; Osmanabad; Pune; Sindhudurg.

*Note* : A native of Mexico.

**Yucca gloriosa** L. Sp. Pl. 319. 1753; Cooke, Fl. Pres. Bombay 3: 283. 1958 (Repr. ed.); Bailey, Man. Cult. Pl. 241. 1949. '*Yacca*'.

Trunks short or rising to 1.8-2.4 m high. Leaves 60-75 x 5 cm, lanceolate, sharply pointed. Flowers creamy-white, in large panicles. Capsules 6-ridged, indehiscent, 5.0-6.2 cm long.

*Fls. & Frts.* : March-August.

*Distrib.* : Almost naturalised. Nagpur; Osmanabad; Pune; Sindhudurg; Thane.  
*Note* : A native of the West Indies.

ALLIACEAE

**Agapanthus africanus** (L.) Hoffmagg. Verz. Pfl. 35. 1824; Bailey, Man. Cult. Pl. 245. 1949. *Crinum africanum* L. Sp. Pl. 419. 1753. Bombay 3: 283. 1958 (Repr. ed.).

Herbs, scapigerous, perennial; root of many strong cord-like parts. Leaves numerous, radical, 40-75 x 3.0-3.5 cm, linear, somewhat fleshy. Scapes tall, bearing many-flowered umbels of bright blue flowers. Capsules loculicidal, 3-sided, 2.5-3.0 x 1.0-1.2 cm. Seeds numerous, minute.

*Fls. & Frts.* : May-October.

*Distrib.* : Introduced into Bombay by Nimmo (Cooke, *op.cit.*); Satara (Cooke, *op. cit.*).

*Note* : A native of S. Africa, known as the African blue lily.

TACCACEAE

TACCA J. R. & J. G. A. Forst. (*nom. cons.*)

- |                      |                                |
|----------------------|--------------------------------|
| 1. Leaves entire     | ... <i>T. integrifolia</i>     |
| 1. Leaves tripartite | ... <i>T. leontopetaloides</i> |

**Tacca integrifolia** Ker.-Gawl. in Bot. Mag. 35: t. 1488. 1812; Hook. f. Fl. Brit. India 6: 287. 1892; Drenth in Blumea 20: 388. 1972. *T. laevis* Roxb. Fl. Ind. 2: 171. 1832; Hook. f. *op.cit.* 288; Cooke, Fl. Pres. Bombay 3: 263. 1958 (Repr. ed.).

Rhizomes cylindrical, up to 12 x 3 cm with apical leaves. Rootstock subcylindric. Leaves 2-13, 7.5-65.0 x 3-25 cm, elliptic-ovate; petiole as long as blade. Scapes 9-65 cm long, greenish-purple, recurved, 6-12-flowered. Flowers pedicelled, bluish, greenish-grey or violet. Fruits triangular to circular, 2.5-5.0 x 1.0-2.5 cm, green to black, tinged with purple. Seeds ovoid, 6-16-ribbed.

*Illus.* : Deb in Indian Forester 90: 241, f. 1-2. 1964 (*T. chowdhuriana*).

*Notes* : *T. laevis* Roxb. is given in the 'Flora of British India' as occurring in the S. Konkan, on the authority of Nimmo ex Grah. Cat. 230. Cooke (*op. cit.*) feels that it cannot be considered as an indigenous plant. Dalzell does not mention it in his 'Bombay flora'. Woodrow merely quotes Graham (*op. cit.*) and no Bombay botanists seem to have found the plant in the Presidency.

***T. leontopetaloides* (L.) O. Ktze.** Rev. Gen. Pl. 2: 704. 1891; Drenth in Blumea 20: 375. 1972. *Leontice leontopetaloides* L. Sp. Pl. 313. 1753. *Tacca pinnatifida* J. R. & J. G. A. Forst. Char. Gen. 35: t. 35. 1776; Hook. f. Fl. Brit. India 6: 287. 1892; Cooke, Fl. Pres. Bombay 3: 262. 1958 (Repr. ed.). 'Deva-kanda'.

Herbs, perennial, erect; rootstock globose, 15-25 cm in diam.; rootlets superficial. Leaves 1-3, 30-90 cm in diam., broadly obovate, ovate or oblong-ovate, segments variously pinnatifid, margins undulate; petioles 30-90 cm long. Scapes longer than petiole, 10-40-flowered. Flowers greenish-yellow, pedicellate, drooping, c 1.75 cm across. Fruits c 2.0 x 1.7 cm, ovoid, yellow, 6-ribbed. Seeds many, ovoid to ellipsoid, flattened, ribbed.

*Fls. & Frts.* : July-October.

*Illus.* : Hepper, Fl. W. Trop. Afr. 3(1): 177, f. 379. 1968; Lakshminarasimhan & Sharma, Fl. Nasik Dt. 463, f. 33 & 464, f. 34. 1991.

*Distrib.* : Amaravati; Bombay; Chandrapur; Nagpur; Nasik; Pune; Raigad; Ratnagiri; Sindhudurg; Thane.

## DIOSCOREACEAE

### DIOSCOREA L.

1. Stems climbing to right :
  2. Male spikes produced among leaves, not on special leafless branches, or near ends in axils of gradually diminishing leaves or of bracts ... *D. oppositifolia*
  2. Male spikes on special flowering and leafless branches :
    3. Special flowering branches short, sometimes much shorter than spikes themselves ... *D. wallichii*
    3. Special flowering branches usually longer than leaves and much longer than spikes :
      4. Male spikes with zigzag axes; stems winged ... *D. alata*
      4. Male spikes and stems not as above ... *D. belophylla*

1. Stems climbing to left :
  5. Male flower with a disc; seeds winged all round ... *D. esculenta*
  5. Male flowers without a disc; seeds winged towards base only :
    6. Leaves simple ... *D. bulbifera*
    6. Leaves compound :
      7. Stamens 6 ... *D. hispida*
      7. Stamens 3, staminodes 3 :
        8. Leaves 3- and 5-foliolate-mixed, glabrous or nearly so when old ... *D. pentaphylla*
        8. Leaves 5-foliolate below, simple above, lower surface persistently white-tomentose ... *D. tomentosa*

**Dioscorea alata** L. Sp. Pl. 1033. 1753; Hook. f. Fl. Brit. India 6: 296. 1892; Sant. in J. Bombay nat. Hist. Soc. 49: 634, t. 3. 1951. *D. globosa* Roxb. Fl. Ind. 3: 797. 1832; S.M. Almeida, Fl. Savantwadi 2:35. 1990. *D. alata* var. *globosa* (Roxb.) Prain, Bengal Pl. 2: 1067. 1903 [803. 1963 (Repr. ed.)]; Cooke, Fl. Pres. Bombay 3: 267. 1958 (Repr. ed.). 'Coradu'.

Tubers large, solitary; stems up to 16 cm long. Leaves simple, opposite c 15 x 14 cm, subsagittate or subhastate-ovate, acuminate, mucronulate, usually 5-nerved. Male flowers rarely produced, when present in spikes on leafless branches. Female flowers in spikes longer than leaves, rarely produced. Capsules c 2.0 x 1.3 cm, drying reddish-brown. Seeds winged, all round.

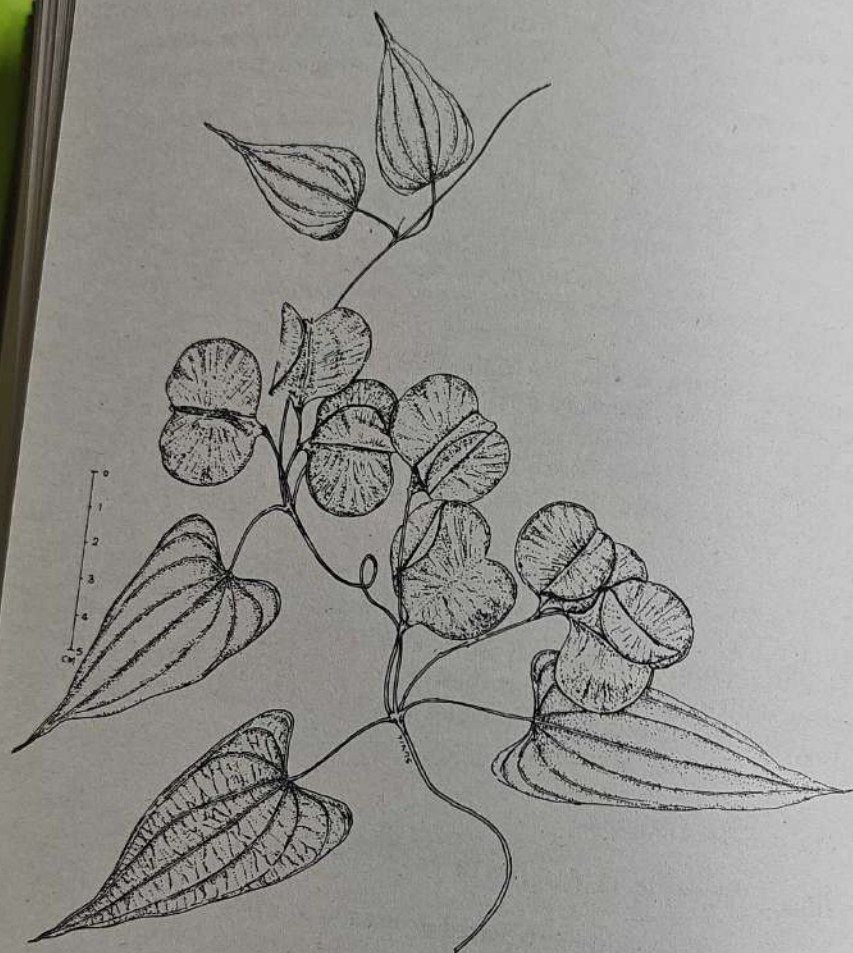
Fls. & Frts. : August.

Illus. : Wight, Ic. tt. 810 & 812. 1844; Sant. op. cit.

Distrib. : Commonly cultivated or escape in wild. Bhandara; Pune; Raigad; Sindhudurg; Thane.

**D. belophylla** (Prain) Haines, For. Fl. Chota Nagpur 530. 1910; Sant. in J. Bombay nat. Hist. Soc. 49: 634, t. 2. 1951. *D. nummularia* Lam. var. *belophylla* Prain, Bengal Pl. 2: 1065, 1067. 1903 [2: 802. 1963 (Repr. ed.)]. *D. glabra* Hook. f. Fl. Brit. India 6: 294. 1892 non Roxb. 1832 p.p.

Shrubs, climbing, unarmed; tubers 1-3, small, subfusiform. Leaves simple, 7.5-13.0 x 2-9 cm, sagittate-ovate or upper cordate-ovate, lower often alternate, upper usually opposite, 5-nerved. Male spikes 2.5-4.0 cm long; female flowers in solitary spikes, 5.5-12.0 cm long.



*Dioscorea belophylla* (Prain) Haines

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Capsules 1.5–2.0 x 1.1–3.0 cm, obovate with retuse apex or obcordate, stipe short, wings evenly rounded. Seeds with reddish-brown wing all around.

*Fls. & Frts.* : September–December.

*Illus.* : Sant. *op. cit.*; Siddiqi in Nasir & Ali, *Fl. W. Pak.* 53: 2, f. 1. B–E. 1973.

*Distrib.* : Ahmednagar; Amaravati; Kolhapur; Nasik; Pune; Ratnagiri; Satara; Sindhudurg; Thane.

*Notes* : Cooke had not reported this species from the erstwhile Bombay Presidency. Santapau (*op. cit.*) reported it from Khandala (Pune) in Maharashtra.

**D. bulbifera** L. *Sp. Pl.* 1033. 1753; Hook. f. *Fl. Brit. India* 6: 296. 1892; Cooke, *Fl. Pres. Bombay* 3: 265. 1958 (Repr. ed.); Sant. in *J. Bombay nat. Hist. Soc.* 49: 628. 1951; Burkill in Steenis, *Fl. Males.* 1, 4:311, f. 4a–b, 5f. 1951. *D. sativa* Thunb. *Fl. Jap.* 151. 1784 non L. 1753; Hook. f. *op. cit.* 295 p.p. 'Godri', 'Gorkan', 'Kadu-kand', 'Karanda'.

Climbers, stout; tubers solitary, globose to pyriform with long roots produced above it; bulbils warted. Leaves alternate, 5–16 x 3.5–13.5 cm, broadly ovate-cordate. Inflorescence of axillary, pendulous spikes; male spikes 6.5–10.0 cm long; female spikes 10–25 cm long. Capsules 1.7–2.0 x 0.5 cm, reflexed, wings rounded at both ends. Seeds winged at base, brown.

*Fls. & Frts.* : July–March.

*Illus.* : Wight,  *Ic. t.* 878. 1845; Prain & Burkill in *Ann. Roy. Bot. Gard. Calcutta* 14: 111, t. 59–51. 1936; Burkill in Steenis, *op. cit.*; Siddiqi in Nasir & Ali, *Fl. W. Pak.* 53: 4, f. 2, a–E. 1973.

*Distrib.* : Common in all districts.

**D. esculenta** (Lour.) Burkill in *Gard. Bull. Str. Settle.* 1: 396, t. 3. 1917; Sant. in *J. Bombay nat. Hist. Soc.* 49: 627. 1951. *Oncus esculentus* Lour. *Fl. Cochinch.* 194. 1790. *Dioscorea aculeata sensu* Hook. f. *Fl. Brit. India* 6: 296. 1892 non L. 1753. *D. sativa* L. *Sp. Pl.* 1033. 1753 p.p. non *sensu* Hook. f. *op. cit.* 295. *D. spinosa* Roxb. ex Hook. f. *op. cit.* 291. *D. fasciculata* Roxb. *Fl. Ind.* 3: 81. 1832; Hook. f. *op. cit.* 296; Cooke, *Fl. Pres. Bombay* 3:267. 1958 (Repr. ed.). *D. fasciculata* var. *spinosa* (Roxb. ex Hook. f.) Prain, *Bengal. Pl.* 2: 1066. 1903 [802. 1963 (Repr. ed.)]; Cooke, *op. cit.* 'Kate-Kanagi'.

Tubers many at end of fibrous roots, globose, elliptic or cylindrical, stem terete, green or purple. Leaves alternate, broadly ovate, cordate. Male flowers in 2.5–10.0 cm long, spike-like racemes; base spikes 10–25 cm long. Capsules c 2.5 cm long, oblong, reflexed.

*Distrib.* : Usually cultivated but also seen as an escape. Bombay, Kolhapur; Ratnagiri; Sindhudurg; Thane.

*D. hispida* Dennst. Schluess. Hort. Malab. 15. 1818; Sant. in J. Bombay nat. Hist. Soc. 49: 629, t. 2. 1951; Burkill in Steenis, Fl. Males. 1, 4: 318, f. 5k–n, 6e. 1951. *D. daemonia* non Roxb. 1892; Hook. f. Fl. Brit. India 6: 289. 1892; Cooke, Fl. Pres. Bombay 3: 264. 1958 (Repr. ed.). 'Vaskand'.

Tubers depressed-globose, often lobed; roots produced above the tuber; stems usually prickly. Leaves alternate; leaflets 9.5–11.0 x 5.5–7.0 cm, ovate-oblong or elliptic-oblong, hairy and glandular beneath. Flowers greenish-yellow; male flowers in dense panicle spikes; female flowers in elongate, simple, solitary spikes. Capsules up to 4.5 cm long, reflexed, wings semi-elliptic or semi-ovate with a short margin. Seeds brown, winged towards base.

*Fls. & Frts.* : June–December.

*Illus.* : Wight, Ic. t. 811. 1844 (*D. daemonia*); Sant. *op. cit.*; Burkill in Steenis, *op. cit.*

*Distrib.* : Akola; Amaravati; Aurangabad; Bombay; Buldhana; Chandrapur; Dhule; Kolhapur; Nagpur; Nasik; Pune; Raigad; Ratnagiri; Sindhudurg; Thane; Yavatmal.

*D. oppositifolia* L. Sp. Pl. 1033. 1753; Hook. f. Fl. Brit. India 6: 292. 1892; Cooke, Fl. Pres. Bombay 3: 266. 1958 (Repr. ed.); Sant. in J. Bombay nat. Hist. Soc. 49: 632, t. 1. 1951. *D. lanceolata* Heyne ex Hook. f. *op. cit.* 'Medwan', 'Paspoli'.

Tubers very long, cylindrical; stems up to 4 m long. Leaves simple, alternate to opposite, 3–16 x 1.5–10.8 cm, elliptic-oblong, elliptic-lanceolate or elliptic-obovate. Inflorescence of axillary spikes. Flowers green. Capsule 3.5–4.5 cm across, with a stipe, wings 1.6–2.4 cm long, evenly rounded. Seeds with a brown wing all round.

*Fls. & Frts.* : July–December.

*Illus.* : Wight, Ic. t. 813. 1844; Sant. *op. cit.*; Gandhi in Sald. & Nicols. Fl. Hassan. Dt. 807, f. 121A–Ab. 1976; Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 612. 1988.

*Distrib.* : Ahmednagar; Amaravati; Aurangabad; Bombay; Dhule; Kolhapur; Nagpur; Nasik; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

**D. pentaphylla** L. Sp. Pl. 1032. 1753; Hook. f. Fl. Brit. India 6: 289. 1892; Cooke, Fl. Pres. Bombay 3: 264. 1958 (Repr. ed.); Sant. in J. Bombay nat. Hist. Soc. 49: 631, t. 3. 1951; Burkill in Steenis, Fl. Males. 1, 4: 315, f. 5y, 6c. 1951. *D. jacquemontii* Hook. f. *op.cit.*

1. Stems prickly at base; leaves sparsely pubescent below ... var. *pentaphylla*
1. Stems usually with 2 prickles at each node; leaves almost glabrous ... var. *jacquemontii*

var. *pentaphylla*. 'Sal', 'Shendon-vel', 'Ulshi'.

Tubers usually simple. Leaves alternate; leaflets 3.5–12.0 x 1.0–5.5 cm, elliptic-lanceolate, ovate or obovate. Flowers white or greenish-white; male flowers in racemes towards branch endings; female flowers in pendulous spikes. Capsules 1.7–2.5 cm long, retuse at both ends. Seeds winged only towards base.

*Fls. & Frts.* : July–November.

*Illus.* : Wight, Ic. t. 814. 1844; Sant. *op. cit.*; Burkill in Steenis, *op. cit.*; Gandhi in Sald. & Nicols. Fl. Hassan Dt. 807, t. 121 B–Bb. 1976; Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 613. 1988.

*Distrib.* : Ahmednagar; Amaravati; Aurangabad; Bhandara; Bombay; Buldhana; Chandrapur; Dhule; Kolhapur; Nagpur; Nasik; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

var. *jacquemontii* Prain & Burkill in Ann. Roy. Bot. Gard. Calcutta 14: 167. 1936. 'Alshi'.

Tubers elongate, c 30 cm long, with white flesh. Flowers fragrant, in panicles; stamens 3, alternating with 3 staminodes. Capsules oblong. Seeds winged at apex.

*Fls. & Frts.* : July–September.

*Distrib.* : Pune; Satara; Thane.

**D. tomentosa** Koen. ex Spr. Pl. Pugill. 92. 1815; Hook. f. Fl. Brit. India 6: 289. 1892; Sant. in J. Bombay nat. Hist. Soc. 49: 630. 1951.

Tubers several, long, cylindrical; stems prickly at base. Leaves variable, middle leaflet largest up to 15 x 5 cm, elliptic-ovate, acuminate; lateral smaller and more or less unequal sided. Male flowers

in paniculate racemes, c 2.5 cm long; female flowers in long simple spikes. Capsules c 2.5 cm long, oblong, wings rounded at both ends, downy-pubescent. Seeds winged towards base of locules, 1.5-2.0 cm long.

*Fls. & Frts.* : July-October.

*Illus.* : Matthew, *Illus. Fl. Tamilnadu Carnatic* 2: t. 738. 1982.

*Distrib.* : Bombay; Pune.

**D. wallichii** Hook. f. *Fl. Brit. India* 6: 295. 1892; Sant. in *J. Bombay nat. Hist. Soc.* 49: 633, t. 1. 1951. '*Kadu-Kanda*'.

Tubers 1 m or more long; stems stout, prickly towards base. Leaves alternate, simple, cordate, acuminate, 10-15 x 7-15 cm, 7-nerved. Flowers white or brown; male flowers in spikes on short leafless branches; female flowers in decurved slender spikes. Capsules 2.5-3.0 cm long, wings truncate above and below, rounded along margins. Seeds orbicular with brown wing all round.

*Fls. & Frts.* : October-February.

*Illus.* : Sant. *op. cit.*

*Distrib.* : Bombay; Kolhapur; Nasik; Pune; Ratnagiri; Thane; Yavatmal.

#### EXCLUDED SPECIES :

**D. glabra** Roxb. *Fl. Ind.* 3: 804. 1832; Hook. f. *Fl. Brit. India* 6: 294. 1892 *p.p.*; Cooke, *Fl. Pres. Bombay* 3: 267. 1958 (Repr. ed.).

Cooke (*op. cit.*) feels that this species does not appear to occur in the Bombay Presidency, though 'Konkan' is assigned as habitat in Hook. f. *op. cit.* There are no specimens from Konkan in Herb. Kew. Woodrow in his list merely copies the *Fl. Brit. India* but neither he nor any other botanist has collected the plant in Bombay Presidency.

#### LILIACEAE

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|--|-----|-----------|
| 1. Leaves usually radical, often distichous, narrow with equitant sheaths; seeds various | ... | OPHIPOGON |
| 1. Leaves various; seeds 1 or more, globose or flattened :                               |     |           |
| 2. Leaves replaced by cladodes; fruit a berry  | ... | ASPARAGUS |
| 2. Leaves not as above; fruit a loculicidal or septicidal capsule :                      |     |           |

# FLORA OF MAHARASHTRA STATE

- 115
- ALOE
- ASPHODELUS
- CHLOROPHYTUM
- GLORIOSA
- CAMPTORRHIZA
- IPHIGENIA
- SCILLA
- DRIMIA
- DIPCADIA

## ALOE L.

*Aloe vera* (L.) Burm. f. Fl. Ind. 83. 1768; Cooke, Fl. Pres. Bombay 3: 283. 1958 (Repr. ed.); Gandhi in Sald. & Nicols. Fl. Hassan Dt. 793. 1976. *A. perfoliata* var. *vera* L. Sp. Pl. 320. 1753. 'Khorpad', 'Yellia'.

Herbs, acaulescent. Leaves radical, 40-60, 2-8 cm, ensiform, narrowed from base to apex. Scapes 1-3. Inflorescence of terminal racemes, c 40 cm long. Flowers yellow or orange. Capsules c 1.5 x 1.0 cm, cylindrical or ellipsoid-oblong.

*Fls. & Frts.* : December-May.

*Illus.* : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 740. 1982.

*Distrib.* : Scattered in waste places, road sides and along hedges. Ahmednagar; Akola; Buldhana; Nagpur; Nasik; Osmanabad; Pune; Satara; Thane.

## ASPARAGUS L.

1. Flowers axillary, solitary, clustered or umbelled, not racemose ... *A. africanus*
1. Flowers racemose :
  2. Cladodes linear, flattened, usually falcate ... *A. gonoclados*
  2. Cladodes subulate, terete or triquetrous :
    3. Cladodes short, less than 1.2 cm long; bracts large ... *A. laevisimus*
    3. Cladodes more than 1.2 cm long, very slender; bracts small ... *A. racemosus*

**Asparagus africanus** Lam. Encycl. 1: 295. 1783; Jessop in Bothalia 9: 48. 1966; Lakshminarasimhan & Sharma in J. Econ. Tax. Bot. 8: 461, f. 1-7. 1986 & Fl. Nasik Dt. 470, f. 1-7. 1991.

Undershrubs, c 1 m high; stems woody, twining; branches solitary. Leaves reduced to free, papery, scarious scales. Cladodes fascicled, 6-11-nate, 0.2-0.6 cm long, slightly curved. Peduncles strongly ribbed, articulated below middle. Perianth segments 0.2-0.3 cm long, elliptic-oblong, white.

Fls. : April.

Illus. : Hepper, Fl. W. Trop. Afr. 3(1) : 93, f. 349. 1968; Lakshminarasimhan & Sharma, *op.cit.*

Distrib. : Rare, forming low bushes near fields in association with *Euphorbia ligularia*. Nasik.

Notes : Some authors have opined that *Asparagus asiaticus* L. and *Asparagus africanus* Lam. may be conspecific. However, there are certain differences between the two species as shown below :

<i>Asparagus africanus</i> Lam.	<i>Asparagus asiaticus</i> L.
1. Stems scandent	Stems erect
2. Spines absent on floral branches	Spines present on floral branches
3. Pedicels articulated below the middle	Pedicels articulated at the middle

*Asparagus asiaticus* L. is based probably on a figure of Plukenet whose species was cited by him as "Maderaspatanus", viz., from eastern coast of Peninsular India (Jessop, *op.cit.*). *Asparagus africanus* Lam. is based on an African plant. Jessop feels - "whether or not the Indian species is synonymous with the the South African plants would require

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further work on the material from India and Africa... It 'therefore' seems better to regard this name (*Asparagus asiaticus* L.) as not applicable to South African species until work is done on the genus in a wider geographical context". Kamble & Sharma in J. Econ. Tax. Bot. 13: 493-496. 1989 also consider *A. asiaticus* as a distinct species and not conspecific to *A. africanus*. They have tabulated the differences between the two species.

**A. gonoclados** Baker in J. Linn. Soc. Bot. 14: 627. 1875; Hook. f. Fl. Brit. India 6: 318. 1892; Cooke, Fl. Pres. Bombay 3: 271. 1958 (Repr. ed.).

Undershrubs, much-branched, subscandent, armed; main stems smooth, terete; branches firm, green, 3-quetrous. Leaves spurred at base with hard spines, 0.6-1.2 cm long. Cladodes 2-6-nate, 2.0-2.5 x 0.13-0.2 cm, ascending, firm, subcostate, narrowed at both ends, finely spinous-pointed. Racemes 2.5-7.5 cm long. Flowers white; pedicels jointed about the middle. Berries globose, c 0.42 cm in diam. or didymous and twice as broad.

*Fls. & Frts.* : June-January.

*Distrib.* : Ahmednagar; Konkan (Cooke, *op. cit.*); Pune; Satara.

**A. laevisissimus** Steud. ex Baker in J. Linn. Soc. Bot. 14: 623. 1875; Hook. f. Fl. Brit. India 6: 317. 1892; Cooke, Fl. Pres. Bombay 3: 271. 1958 (Repr. ed.).

Undershrubs, subscandent; main stems terete; branches conspicuously striate; branchlets ascending, angular. Leaves with stout conical deflexed, rigid, spinous spurs, 0.75-1.2 cm long at base. Cladodes 3-6-nate, spreading or ascending. Racemes 2.5-5.0 cm long. Flowers white, solitary or twin; pedicels jointed at or below the middle. Berries c 0.63 cm in diam., globose.

*Fls. & Frts.* : July-August.

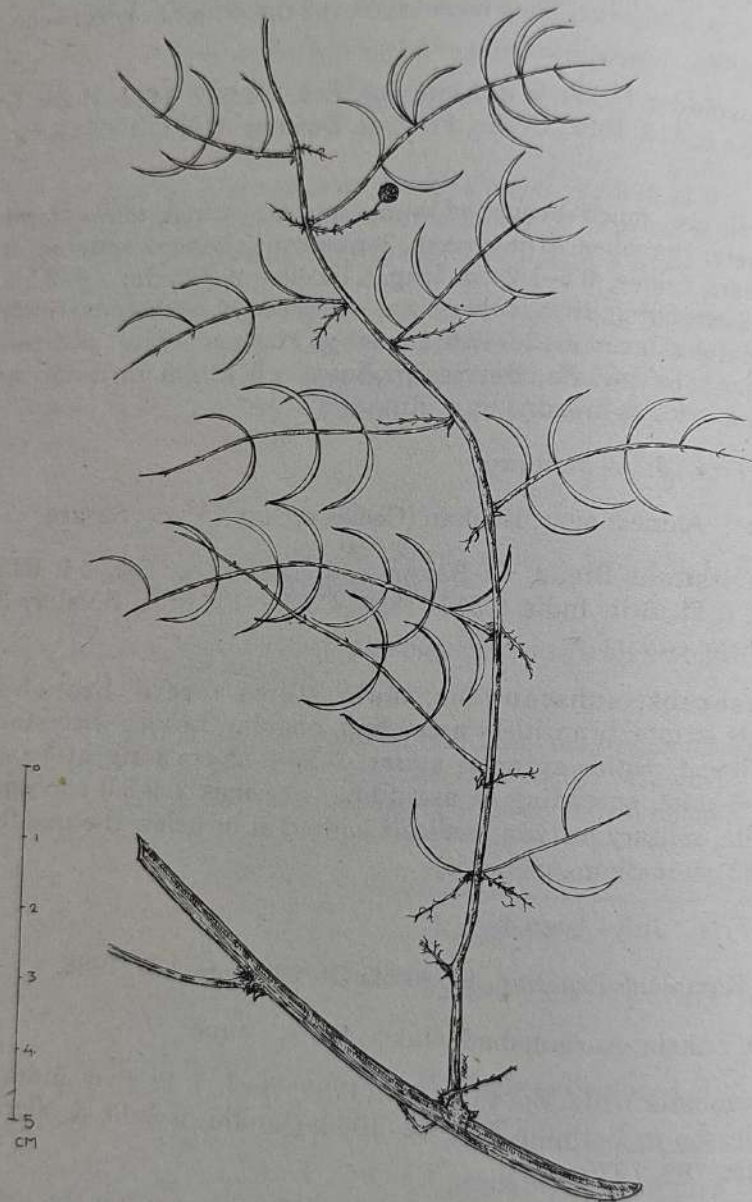
*Illus.* : Kamble & Pradhan, Fl. Akola Dt. 222, figs. 1-8. 1988.

*Distrib.* : Akola; Aurangabad; Nasik; Pune; Thane.

**A. racemosus** Willd. Sp. Pl. 2: 152. 1799; Hook. f. Fl. Brit. India 6: 316. 1892; Jessop in Bothalia 9(1): 72. 1966; Gandhi in Sald. & Nicols. Fl. Hassan Dt. 793. 1976.

- |                                   |     |                       |
|-----------------------------------|-----|-----------------------|
| 1. Racemes terminated by flowers  | ... | var. <i>racemosus</i> |
| 1. Racemes terminated by cladodes | ... | <i>javanica</i>       |

var. *racemosus*. '*Sasachigongdi*'.



*Asparagus gonoclados* Baker

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Undershrubs, spinous. Leaves linear-subulate with stout conical spinous spurs, straight. Cladodes spinous pointed, needle-like. Flowers white; perianth 0.2–0.33 cm long. Berries c 0.7 cm in diam., globose, rugose, 1-seeded, with a wrinkled pericarp, red.

*Fls. & Frts.* : June–October.

*Illus.* : Matthew, *Illus. Fl. Tamilnadu Carnatic* 2: t. 741. 1982.

*Distrib.* : Common in all districts.

var. *javanica* (Kunth) Baker in J. Linn. Soc. Bot. 14: 624. 1875; Hook. f. *Fl. Brit. India* 6: 317. 1892; Cooke, *Fl. Pres. Bombay* 3: 270. 1958 (Repr. ed.); Gandhi in Sald. & Nicols. *Fl. Hassan Dt.* 795. 1976. *Asparagus javanica* Kunth, *Enum. Pl.* 5: 100. 1850. *A. jacquemontii* Baker, *op.cit.* 615; Hook. f. *op.cit.* 316; Cooke, *op.cit.* 269. 'Ashwal', 'Satavari'.

Undershrubs, scandent, spinous, much-branched; rootstock tuberos; branches angular. Leaves 0.43–0.63 cm long, linear-subulate, with a stout conical spinous spur, straight or slightly curved, 0.33–0.43 cm long at base. Cladodes spinous-pointed. Racemes 5–15 cm long. Flowers white; pedicels jointed above middle. Berries c 0.43 cm in diam., globose, ripens red.

*Fls. & Frts.* : June–December.

*Distrib.* : Akola; Amaravati; Buldhana; Nagpur; Osmanabad; Pune; Raigad; Ratnagiri; Satara; Sindhudurg.

#### CULTIVATED SPECIES :

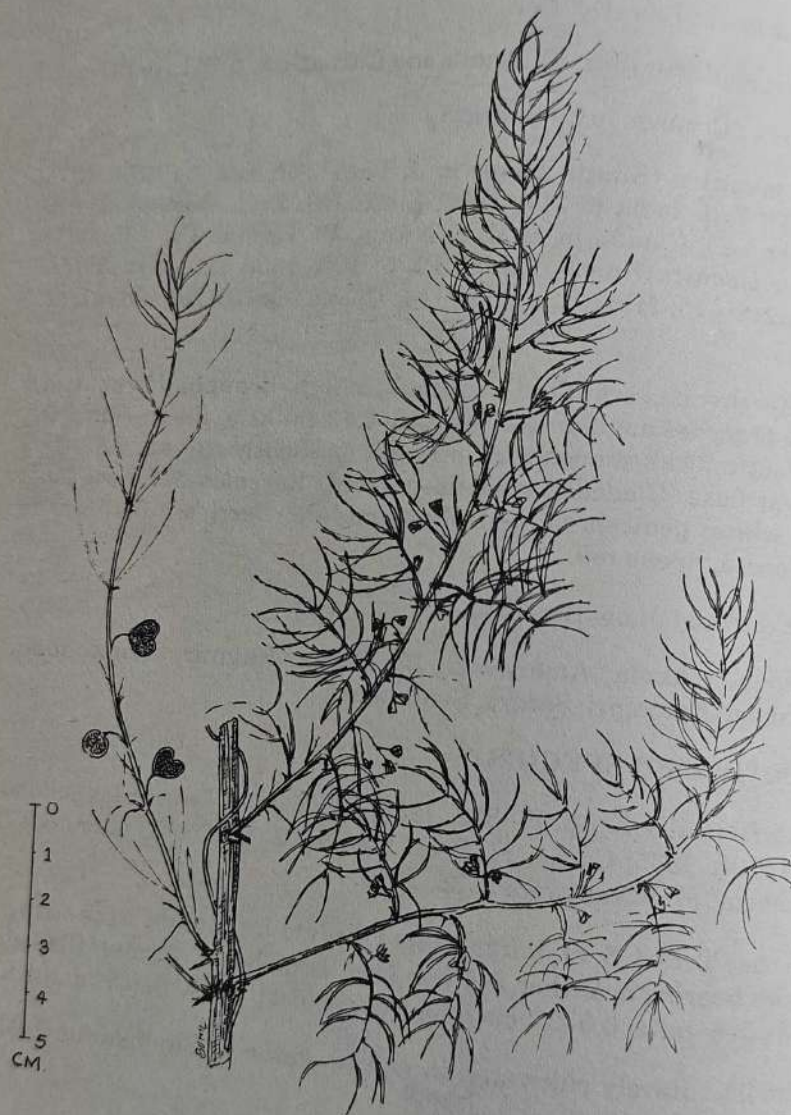
*A. officinalis* L. *Sp. Pl.* 313. 1753; Baker in J. Linn. Soc. London (Bot.) 14: 598. 1875; Cooke, *Fl. Pres. Bombay* 3: 271. 1958 (Repr. ed.); S.M. Almeida, *Fl. Savantwadi* 2: 36. 1990.

Herbs, 0.6–1.5 m long; stems erect; branches ascending. Internodes bearing branches 3–6 mm long. Leaf-bases obscure. Cladode fascicled, 3–6-nate, 0.6–2.4 cm long. Berries deep red, 0.6–0.8 cm thick.

*Distrib.* : Rarely cultivated in private gardens. Sindhudurg (S.M. Almeida, *op. cit.*).

#### ASPHODELUS L.

*Asphodelus tenuifolius* Cavan. in *Anal. Cienc. Nat.* 3:46, t. 27, f. 2. 1801; Hook. f. *Fl. Brit. India* 6:332. 1892 (*excl. syn. A. fistulosus* L.); Cooke, *Fl. Pres. Bombay* 3:279. 1958 (Repr. ed.).



*Asparagus racemosus* Willd. var. *javanica* (Kunth) Baker

Herbs, 25–60 cm tall, annual; roots fleshy. Leaves 15–30 x 0.25–0.33 cm, terete, fistulose, acute, sheathing at base, finely puberulous. Flowers white, distant, laxly racemose, solitary in each bract. Capsules c 0.3 cm across, globose, deeply wrinkled, loculicidal. Seeds 3, black, trigonous, conspicuously transversely ribbed.

*Fls. & Frts.* : November–April.

*Illus.* : Ugemuge, Fl. Nagpur Dt. t. 157. 1986.

*Distrib.* : Frequent in fallow fields. Ahmednagar; Akola; Dhule; Kolhapur; Nagpur; Osmanabad; Pune; Satara.

CAMPTORRHIZA Hutch.

**Camptorrhiza indica** Yadav, Singh & Mathew in Kew Bull. 48: 735, f. 1. 1993.

Herbs, 15–25 cm high, erect, perennial; corms up to 1.5 x 1.3 cm, ovate to subglobose; stems solitary, rigid. Leaves 3–5, cauline, alternate, 5–15 x 0.3–0.7 cm, linear–lanceolate, the leaf base sheathing stem. Inflorescence a coymbose raceme, 3–6-flowered. Flowers bright pink to pinkish–mauve, white in bud stage. Capsules 0.6–1.0 x 0.5–0.7 cm, obovoid, 3–locular with 7–15 seeds. Seeds 2.5–3.0 x 2.5–3.0 mm, subglobose or ovoid, brown.

*Fls. & Frts.* : June–July.

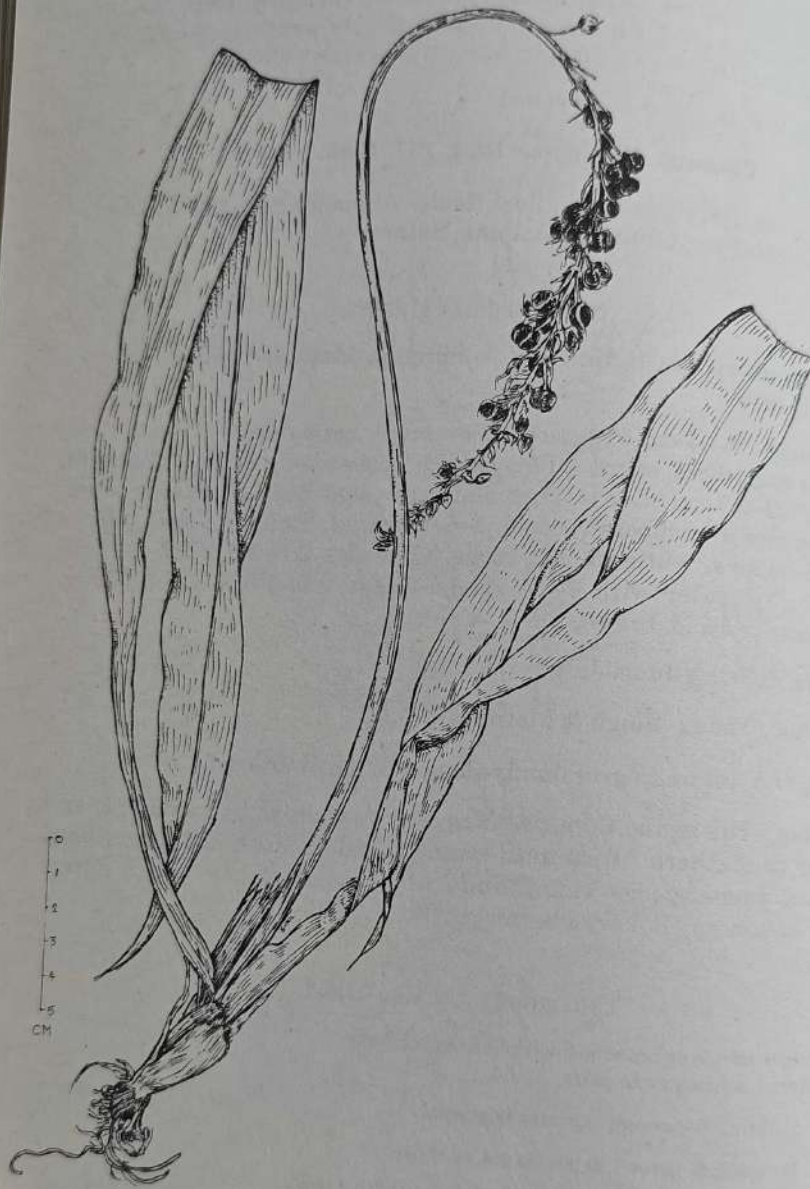
*Illus.* : Yadav, Singh & Mathew, *op. cit.*

*Distrib.* : Rare in grasslands along ditches. Ratnagiri.

*Note* : The genus *Camptorrhiza* was thought to be monotypic and confined to southern Africa until recently. Yadav, Singh & Mathew have described a new species viz., *C. indica* from Maharashtra which differs from *C. strumosa* (Baker) Obermeyer (*op. cit.* 735–737).

CHLOROPHYTUM Ker–Gawl.

1. Racemes simple or branched, with flowers remotely scattered, solitary or in pairs :
  2. Perianth 3-nerved; capsules trigonous ... *C. laxum*
  2. Perianth 5-nerved; capsules not as above:
    3. Leaves linear; scapes naked, rarely with 1 bract; seeds rugulose ... *C. heynei*
    3. Leaves oblong–lanceolate; scapes with 1 or 2 bracts; seeds papillose ... *C. nimmonii*



*Chlorophytum arundinaceum* Baker

1. Flowers in simple or shortly branched dense-flowered racemes :
  4. Leaves elliptic-lanceolate, lanceolate or oblanceolate, petiolate :
    5. Scapes naked :
      6. Scapes shorter than leaves
      6. Scapes longer than leaves ... *C. breviscapum*
    5. Scapes bracteate :
      7. Leaves oblanceolate, margins recurved; scapes covered with scaly bracts forming a cone before flowering ... *C. arundinaceum*
      7. Leaves elliptic-lanceolate, margins not recurved; bracts not as above ... *C. glaucum*
  4. Leaves linear or ensiform, not or hardly contracted into a petiole :
    8. Anther filaments papillose :
      9. Scapes as long as leaves; perianth segments c 0.75 x 0.25 cm, oblanceolate, 5-nerved ... *C. attenuatum*
      9. Scapes longer than leaves; perianth segments c 1.2 x 0.43 cm, oblong, 7-nerved ... *C. tuberosum*
    8. Anther filaments glabrous :
      10. Scapes usually branched; flowers in alternate or subopposite clusters of 4-8 flowers; floral bracts ovate-lanceolate ... *C. bharuchae*
      10. Scapes usually unbranched; flowers in alternate clusters, each of which consists of 3 flowers; floral bracts linear ... *C. borivilianum*

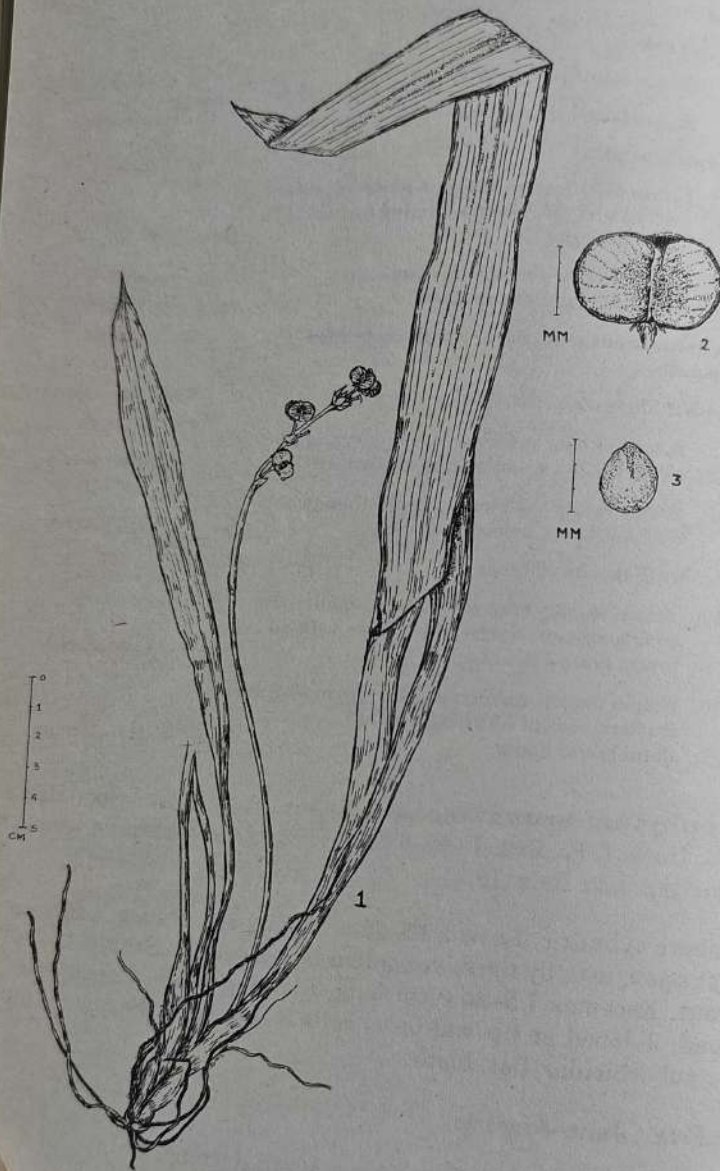
**Chlorophytum arundinaceum** Baker in J. Linn. Soc. Bot. 15:323. 1876; Hook. f. Fl. Brit. India 6:333. 1892. *C. breviscapum sensu* Hook. f. *op.cit.* p.p. non Dalz. 1850.

Root-fibers cylindric. Leaves 15-45 x 3.7-5.0 cm, obtuse, acute or acuminate at apex, usually narrowed into a broad petiole. Scapes 15-50 cm long, stout. Racemes 7.5-20.0 cm long. Flowers white. Capsules c 0.75 cm broad, 2-lobed at tip and base, cells 3-4-seeded. Seeds c 0.33 cm in diam., suborbicular, flat, black.

*Fls. & Frts.* : June-August.

*Distrib.* : Rare in crest of ghats. Amaravati; Ratnagiri.

**C. attenuatum** Baker in J. Linn. Soc. Bot. 15:322. 1876; Hook. f. Fl. Brit. India 6:335. 1892; Cooke, Fl. Pres. Bombay 3:281. 1958 (Repr. ed.).



*Chlorophytum breviscapum* Dalz.  
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Herbs; roots fleshy. Leaves radical, 6-9, membranous, 22.5-45.0 x 1.2-2.5 cm, acute, with 15-20 distinct immersed veins. Scape naked, erect. Racemes 7.5-15.0 cm long. Flowers white; bracts ovate-lanceolate. Capsules globose, acute, 3-winged, broadly obcordate, c 0.75 cm in diam., cells 3-4-seeded.

*Fls. & Frts.* : June-August.

*Illus.* : Wight, Ic. t. 2037. 1853. (*Phalangium attenuatum*).

*Distrib.* : Ahmednagar; Konkan (Cooke, *op. cit.*); Pune.

**C. bharuchae** Ansari, Raghavan & Hemadri in Indian Forester 96:304, f. 1-10. 1970.

Herbs, perennial; roots cylindrical. Leaves 15-55 x 1.5-3.0 cm, many, radical, apex acute to acuminate, margins wavy, hyaline. Scapes usually solitary, rarely two, terminal. Flowers white. Capsules c 0.8 cm long, green, deeply 3-lobed, obcordate. Seeds black, suborbicular, discoid.

*Fls. & Frts.* : May-August.

*Illus.* : Ansari, Raghavan & Hemadri, *op. cit.*

*Distrib.* : Rare. Pune.

**C. borivilianum** Sant. & Fernand. in J. Bombay nat. Hist. Soc. 52:898. 1955.

Herbs, rhizomatous; sessile root-tubers 1-9, up to c 5 x 1 cm. Leaves radical, coriaceous, spirally imbricate at base, sessile, 12-18 x 1.5 cm, linear, lorate or ensiform, flat, apex acute. Scapes 16-30 cm long. Flowers white, c 2.5 cm across, in racemes, bracteate, pedicellate, in clusters of 3; bracts linear, papery, purplish. Capsules loculicidal, greenish-yellow, trigonous, obcordate. Seeds discoid, orbicular, black.

*Fls. & Frts.* : July-August.

*Illus.* : Sant. & Fernand. *op. cit.* 897 (facing page).

*Distrib.* : Rare in moist places along plains and lower hill slopes. Akola; Amaravati; Bombay; Kolhapur; Pune; Raigad.

*Note* : Endemic to Maharashtra and Gujarat.

**C. breviscapum** Dalz. in Hook. Kew J. Bot. 2: 141. 1850; Hook. f. Fl. Brit. India 6: 333. 1892 *p.p.*; Cooke, Fl. Pres. Bombay 3: 280. 1958 (Repr. ed.). 'Kula'.



*Chlorophytum glaucoides* Blatt.

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ovate-lan  
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Herbs, erect; root-fibres with oblong tubers, pendulous from them. Leaves 6-9, membranous, 30-35 x 2.0-3.7 cm, acuminate, flat, margins undulate. Racemes 5-10 cm long. Flowers white; bracts membranous, ovate-lanceolate. Capsules depressed-globose, emarginate, acutely 3-winged, c 1 cm in diam., cells 1-3-seeded. Seeds globose, compressed, c 0.3 cm in diam., finely papillose, black.

*Fls. & Frts.* : August-November.

*Distrib.* : Raigad; Ratnagiri; Satara; Sindhudurg.

**C. glaucoides** Blatt. in J. Asiat. Soc. Beng. (N.S.) 26:361. 1930.

Herbs, c 80 cm high; rootstocks hard. Leaves 4-6, membranous-leathery, 22-33 x 2-4 cm, acuminate at apex. Scapes simple, clothed with sheathing scales. Racemes 15-20 cm long. Flowers white. Capsules c 0.8 cm long, globose, emarginate, triquetrous, black.

*Fls. & Frts.* : August-October.

*Distrib.* : Ahmednagar; Akola; Chandrapur; Nasik; Pune; Satara; Thane.

**C. glaucum** Dalz. in Hook. Kew J. Bot. 2:142. 1850; Hook. f. Fl. Brit. India 6:334. 1892; Cooke, Fl. Pres. Bombay 3:280. 1958 (Repr. ed.).

Herbs, annual; root-fibers cylindric. Leaves 6-8, 30-40 x 2-5 cm, acute, glaucous. Scapes erect, simple. Racemes 15-30 x 2.5 cm. Flowers white. Capsules globose, emarginate, acutely 3-winged, cells 2-4-seeded. Seeds orbicular, c 0.3 cm in diam., compressed, dull black.

*Fls. & Frts.* : September-October.

*Distrib.* : Ahmednagar; Kolhapur; Pune; Raigad; Ratnagiri; Satara.

**C. heynei** Rottl. ex Baker in J. Linn. Soc. 15: 322. 1876. *C. heyneanum* Wall. ex Hook. f. Fl. Brit. India 6: 333. 1892.

Root fibres stout, fleshy. Leaves up to 35.0 x 2.2 cm, hardly narrowed at base. Scapes erect, 20 cm long. Racemes simple, 5-10 cm long. Flowers 1-2 together; perianth white. Capsules c 0.5 x 0.7 cm. Seeds 2-4 per cell, flat, suborbicular, notched at base, black.

*Fls.* : July.

*Distrib.* : Locally abundant. Ratnagiri (S.M. Almeida, 1983-86).

**C. laxum** R. Br. Prodr. 277. 1810; Hook. f. Fl. Brit. India 6: 336. 1892; Cooke, Fl. Pres. Bombay 3: 282. 1958 (Repr. ed.).



*Chlorophytum glaucum* Dalz.

Herb  
6-12, 15-  
recurved,  
flexuous,  
greenish  
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Herbs, 10–15 cm tall; roots with oblong tubers at tips. Leaves 6–12, 15–30 x 0.33–0.63 cm, subdistichous, usually spreading and recurved, acute, nerves numerous, conspicuous. Scapes very slender and flexuous, 2.5–7.5 cm long, naked. Racemes 7.5–25.0 cm long. Flowers greenish-white. Capsules 1.2–3.0 x 0.5 cm, broadly obovate, 3-winged, cells 1–4-seeded. Seeds c 0.3 cm across, irregularly angled, black, minutely papillose.

Fls. & Frts. : July–September.

Illus. : *Phalangium parviflorum* (Dalz.) Wight, Ic. t. 2039. 1853.

Distrib. : Akola; Amaravati; Buldhana; Chandrapur; Dhule; Kolhapur; Nagpur; Osmanabad; Pune; Satara.

**C. nimmonii** (Grah.) Dalz. in Hook. Kew J. Bot. 2:142. 1850; Panigr. in Kew Bull. 30:565. 1975. *Anthericum nimmonii* Grah. Cat. Bombay Pl. 220. 1839. *Chlorophytum orchidastrum sensu* Baker in J. Linn. Soc. Bot. 15:325. 1876 p.p. non Lindl. 1874; Hook. f. Fl. Brit. India 6:336. 1892; Cooke, Fl. Pres. Bombay 3:282. 1958 (Repr. ed.).

Herbs, up to 1 m high; root-fibres tuberous. Leaves 6–9, membranous, 30–60 x 1.2–8.7 cm, acute, strongly nerved; petioles 15.0–22.5 cm long. Scapes c 30 cm long, thick, terete. Flowers white. Capsules c 0.63 x 1.0 cm, depressed-globose, deeply lobed at apex, transversely veined. Seed solitary, flattened, broader than long, orbicular or subreniform, minutely papillose, dull black.

Fls. & Frts. : July–October.

Illus. : Wight, Ic. t. 2038. 1853 (*Phalangium oligospermum*); Hepper, Fl. W. Trop. Afr. 3: 101, f. 351. 1968 (*Chlorophytum orchidastrum*).

Distrib. : Pune; Ratnagiri; Satara; Sindhudurg.

**C. tuberosum** (Roxb.) Baker in J. Linn. Bot. 15: 332. 1876; Hook. f. Fl. Brit. India 6:334. 1892; Cooke, Fl. Pres. Bombay 3:281. 1958 (Repr. ed.). *Anthericum tuberosum* Roxb. Fl. Ind. 2:149. 1824. 'Kuli'.

Herbs, c 30 cm high; root-fibres cylindric, with ellipsoid tubers hanging from them. Leaves 6–12, membranous, sessile, 15–30 x 1.2–2.5 cm, acuminate, margins undulate. Scape terete, naked. Racemes 5–10 cm long. Flowers white. Capsules obovoid, c 1.0 x 0.6 cm, shining, transversely veined, emarginate, cells 4–6-seeded. Seeds irregularly orbicular, c 0.3 cm in diam., black.

Fls. & Frts. : June–September.

*Illus.* : Wight, Ic. t. 2036. 1853 (*Phalangium tuberosum*); Matthew, *Illus. Fl. Tamilnadu Carnatic* 2: t. 742. 1982; Ugemuge, *Fl. Nagpur Dt.* t. 158. 1986.

*Distrib.* : Ahmednagar; Akola; Amaravati; Bombay; Buldhana; Dhule; Nagpur; Nasik; Pune; Raigad; Thane.

#### DIPCADI Medik.

- |  |     |                           |
|--|-----|---------------------------|
| 1. Flowers 2.5–3.6 cm long; styles 2.0–2.5 cm long   | ... | <i>D. concanense</i>      |
| 1. Flowers 0.8–1.5 cm long; styles 0.3–0.6 cm long :   |     |                           |
| 2. Perianth segments equal, both whorls united one-third to half of their length   | ... | <i>D. minor</i>           |
| 2. Perianth segments unequal, outer whorl united up to one-third and those of the inner up to two-thirds of their length : |     |                           |
| 3. Pedicels filiform; filaments adnate wholly to perianth tube   | ... | <i>D. montanum</i>        |
| 3. Pedicels stout; filaments adnate in most of part to perianth tube :   |     |                           |
| 4. Bracts as long as pedicels  | ... | <i>D. saxorum</i>         |
| 4. Bracts much longer than pedicels :  |     |                           |
| 5. Bracts coriaceous, acute  | ... | <i>D. maharashtrensis</i> |
| 5. Bracts scarious, long acuminate   | ... | <i>D. ursulae</i>         |

**Dipcadi concanense** (Dalz.) Baker in *J. Linn. Soc. Bot.* 11:399. 1871; Hook. f. *Fl. Brit. India* 6:346. 1892; Cooke, *Fl. Pres. Bombay* 3:277. 1958 (Repr. ed.); Deb & Dasgupta in *J. Bombay nat. Hist. Soc.* 75:69, f. 10. 1978 & in *Fasc. Fl. India* 7: 3, f. 1–2. 1981. *Uropetalum concanense* Dalz. in Hook. *Kew J. Bot.* 2:143. 1850.

Herbs; scapigerous; bulbs 1.2–1.8 cm, globose. Leaves 3–4 on a bulb, 5–20 x 0.2 cm, linear, apex acute, base broad. Flowers white, in loose racemes, on 15–25 cm long scapes; perianth c 1.5 cm long, stipitate, lobes rounded. Seeds 6 in each locule, compressed, shining black, c 0.8 cm across, rotund.

*Fls. & Frts.* : August–September.

*Illus.* : Deb & Dasgupta, *op.cit.*

*Distrib.* : Bombay; Ratnagiri; Sindhudurg (Cooke, *op. cit.*).

**Dipcadi maharashtrensis** Deb & Dasgupta in *J. Bombay nat. Hist. Soc.* 72:822, t. 1. 1976 & 75:62. 1978 & *Fasc. Fl. India* 7:4, f. 3–4. 1981.

Bulbs c 2.5 x 2.5 cm, globose, rooting profusely from base. Leaves few, 25-30 x 0.5-0.7 cm, plicate, apex acute. Scapes c 36 cm long. Racemes 12-flowered, c 13 cm long. Flowers 1.1-1.3 cm long; perianth 2-seriate, outer lobes lanceolate, linear or deltoid-lanceolate. Capsules subglobose or obovate. Seeds orbicular, compressed, obscurely winged, brownish-black.

*Fls. & Frts.* : August-September.

*Illus.* : Deb & Dasgupta, *op.cit.*; Dasgupta & Deb in Nayar & Sastry, Red Data Book Ind. Pl. 1:179, f. 1987.

*Distrib.* : Grows in sandy grooves on the plateau. Possibly endangered. Satara.

*Notes* : Known only from Panchgani in Maharashtra. It has not been collected since its first collection in 1955.

**D. minor** Hook. f. Fl. Brit. India 6: 346. 1892; Cooke, Fl. Pres. Bombay 3: 278. 1958 (Repr. ed.); Deb & Dasgupta in J. Bombay nat. Hist. Soc. 75: 66. 1978 & Fasc. Fl. India 7: 4. 1981.

Herbs; bulbs 1.8-2.0 x 1.5-2.0 cm, ovoid; roots fibrous. Leaves 12-15 x 0.2-0.3 cm, plicate. Racemes 6-12-flowered. Flowers 0.8-0.9 cm long; perianth 0.75-1.2 cm long, outer lobes as long as the tube.

*Distrib.* : Indeterminate in sandy plateau. 'Ratnagiri' (Cooke, *op. cit.*).

**D. montanum** (Dalz.) Baker in J. Linn. Soc. Bot. 11: 398. 1871; Hook. f. Fl. Brit. India 6: 346. 1892; Cooke, Fl. Pres. Bombay 3: 278. 1958 (Repr. ed.); Deb & Dasgupta in Fasc. Fl. India 7: 6, f. 11-16. 1981. *Uropetalum montanum* Dalz. in Hook. Kew J. Bot. 2: 142. 1850.

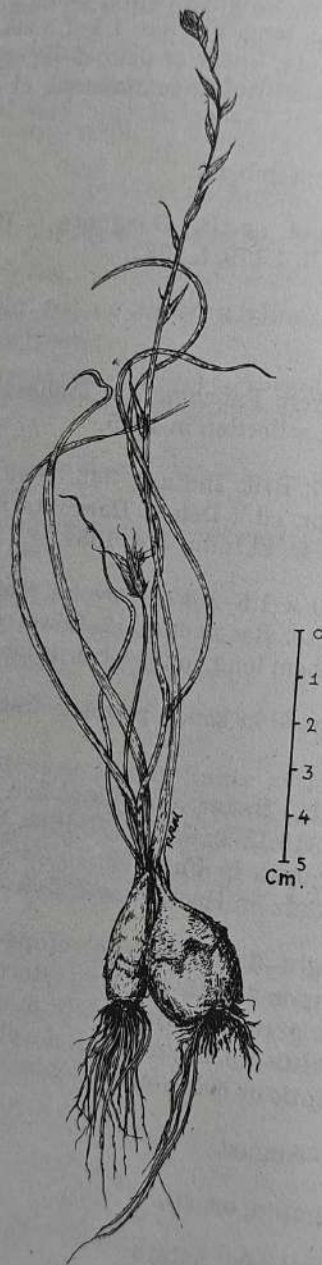
Herbs; bulbs 1-3 x 1-3 cm, ovoid or ellipsoid. Leaves 10-20 x 0.2-0.5 cm, linear. Scapes 18-25 cm long. Racemes 5-15 cm long, 5-15-flowered. Flowers greenish with white margins or buff-orange red. Capsules 0.5-1.0 x 1.0-1.5 cm, obovoid, deeply trilobed. Seeds 3-5 per locule, orbicular, elliptic or ovate-elliptic, black, reticulated.

*Fls. & Frts.* : June-August.

*Illus.* : Deb & Dasgupta, *op. cit.*

*Distrib.* : Pune; Ratnagiri; Satara.

**D. saxorum** Blatt. in J. Bombay nat. Hist. Soc. 32: 736. 1928; Deb & Dasgupta, *Ibid.* 75:62, f.5. 1978 & in Fasc. Fl. India 7: 9. 1981.



*Dipcadi ursulae* Blatt var. *ursulae*.

Bulbs 1  
linear. Scape  
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Illus. :

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Herb  
x 0.5-1.5  
or elliptic.

Fls.

Bulbs 1.5–2.0 x 1.5–2.0 cm, globose. Leaves 16–25 x 0.5–0.7 cm, linear. Scapes 20–40 cm long. Racemes loose, 15–20-flowered. Flowers c 1 cm long, white. Capsules 0.8–1.0 x 1.0–1.3 cm, obovoid-oblong. Seeds 4–9 per locule, orbicular, elliptic or quadrangular.

*Fls. & Frts.* : June–November.

*Illus.* : Deb & Dasgupta, *op.cit.*

*Distrib.* : Vulnerable, on rocky hills. Bombay.

*Note* : Grows in Borivili and Salsette, and endemic to Maharashtra.

**D. ursulae** Blatt. in J. Bombay nat. Hist. Soc. 32:735. 1928; Deb & Dasgupta, *Ibid.* 75:63, f. 7. 1978 & in Fasc. Fl. India 7: 10. 1981.

1. Scapes 15–20 x 0.2–0.6 cm; mature racemes 6–14-flowered; ovary stipitate, 0.4–0.5 x 0.15–0.25 cm
1. Scapes 30–70 x 0.4–1.5 cm; mature racemes 22–25-flowered; ovary sessile, 0.45–0.47 x 0.1 cm

... var. *ursulae*

... var. *longiracemosae*

var. *ursulae*.

Herbs, scapigerous, 15–30 cm long; bulbs c 1 x 2 cm, globose or ovoid, tunicated. Leaves 1–6, 15–30 x 0.4–0.7 cm, linear, plicate. Scapes 1–2 per bulb. Flowers white, cream or orange, greenish outside; perianth: outer lobes plicate, recurved at middle, inner lobes shorter, recurved at tip. Capsules obovoid-oblong, straw coloured. Seeds c 0.6 x 0.5 cm, orbicular or ellipsoid.

*Fls. & Frts.* : April–August.

*Illus.* : Deb & Dasgupta, *op. cit.*

*Distrib.* : Vulnerable on gravelly, grassy hill tops. Akola; Pune; Satara.

*Note* : Endemic to Maharashtra.

var. **longiracemosae** Deb & Dasgupta in J. Bombay nat. Hist. Soc. 72: 823, t. 2. (1975) 1976 & 75:66. 1978 & Fasc. Fl. India 7:11. 1981.

Herbs, 0.7–1.0 m tall; bulbs 3.0–4.5 x 3–4 cm, white. Leaves 30–66 x 0.5–1.5 cm. Perianth white. Seeds 0.35–0.4 x 0.4 cm, orbicular, ovate or elliptic.

*Fls. & Frts.* : July–August.

*Illus.* : Deb & Dasgupta, *op. cit.*

*Distrib.* : Pune.

DRIMIA Jacq. ex Willd.

- |  |     |                      |
|--|-----|----------------------|
| 1. Pedicels shorter than bracts  | ... | <i>D. polyphylla</i> |
| 1. Pedicels longer than bracts :   |     |                      |
| 2. Pedicels 1.0–3.5 cm long; racemes loose                               | ... | <i>D. indica</i>     |
| 2. Pedicels 0.4–0.8 cm long; racemes dense :                             |     |                      |
| 3. Bracts persistent   | ... | <i>D. polyantha</i>  |
| 3. Bracts evanescent :   |     |                      |
| 4. Perianth lobes longer, 0.8–0.9 cm long; filaments longer than anthers | ... | <i>D. razii</i>      |
| 4. Perianth lobes shorter; filaments shorter than anthers                | ... | <i>D. congesta</i>   |

***Drimia congesta*** (Wight) Ansari & Raghavan in J. Bombay nat. Host. Soc. 77:174. 1980. *Urginea congesta* Wight, Ic. t. 2064. 1853 (fig. on left); Hook. f. Fl. Brit. India 6: 348. 1892; Deb & Dasgupta in Bull. Bot. Surv. India 16:121, f. 3. (1974) 1977 & Fasc. Fl. India 7: 16, f. 34–38. 1981.

Herbs; bulbs c 5 x 4 cm, ovoid, tunicated. Leaves 12.5–15.0 cm long, synanthus. Scapes 10–60 cm long, slender. Racemes 5.0–7.5 cm long, 10–14-flowered, ascending. Flowers white or purple, 0.5–0.7 x 0.2–0.3 cm. Capsules 0.8–1.0 x 0.6–0.8 cm, subglobose, trilobed, loculicidal, 9–12-seeded. Seeds 0.6–0.7 x 0.5–0.6 cm, ellipsoid, compressed, deep brown, shining, broadly winged.

*Fls. & Frts.* : April–May.

*Illus.* : Wight, *op. cit.*; Deb & Dasgupta, *op. cit.*

*Distrib.* : Endangered. Pune.

***D. indica*** (Roxb.) Jessop in J. S. Afr. Bot. 43: 272. 1977. *Scilla indica* Roxb. Fl. Ind. 2: 147. 1824. *Urginea indica* (Roxb.) Kunth, Enum. Pl. 4: 333. 1843; Hook. f. Fl. Brit. India 6: 347. 1892; Cooke, Fl. Pres. Bombay 3: 277. 1958 (Repr. ed.); Deb & Dasgupta in Bull. Bot. Surv. India 16: 118. (1974) 1977 & Fasc. Fl. India 7:17, f. 39–46. 1981. *U. coromandeliana* (Roxb.) Hook. f. *op. cit.* *U. wightii* Hook. f. *op. cit.* 'Jangli-Kand', 'Jangli-piaz'.

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17–100 cm  
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Capsules 1-  
scarious.

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*Illus.*  
Tamilnadu

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Yavatmal.

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nat. Hist.  
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1977 & F

Herb  
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Capsules

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6:348. 18  
1977 & F

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and Deb

Herbs; bulbs 6-8 x 4-6 cm, ovoid. Leaves 20-30 x 0.4-0.6 cm, linear, lanceolate or lorate, ensiform, hysteroanthus, apex acute. Scapes 17-100 cm long, erect, purplish-brown. Racemes 1.2-60.0 cm long, 4-30-flowered. Flowers 0.5-1.2 cm long, reddish-green or variable. Capsules 1-2 x 0.5-1.0 cm, ellipsoid. Seeds 4-10 per locule, black, wing scarious.

*Fls. & Frts.* : February-May.

*Illus.* : Deb & Dasgupta, *op. cit.*; Matthew, Further *Illus. Fl. Tamilnadu Carnatic* 4: t. 617. 1988 (*Urginea indica*).

*Distrib.* : Akola; Amaravati; Bombay; Chandrapur; Kolhapur; Nasik; Osmanabad; Pune; Ratnagiri; Satara; Sindhudurg; Thane; Yavatmal.

*Note* : Jessop (*op. cit.*) reduced *Urginea* Steinh. to the synonymy of *Drimia* based on the colour of bulbs, the degree of fusion of perianth lobes and the tendency of stamens to be connivent which are common to both genera.

**D. polyantha** (Blatt. & McC.) Ansari & Raghavan in J. Bombay nat. Hist. Soc. 77: 174. 1980. *Urginea polyantha* Blatt. & McC. *Ibid.* 32: 735. 1928; Deb & Dasgupta in Bull. Bot. Surv. India 16: 122, f. 4. (1974) 1977 & Fasc. Fl. India 7: 20, f. 47-51. 1981. '*Pachankanda*'.

Herbs, scapigerous; bulbs globose-ovoid, tunicate. Leaves 30-40 x 1.5-4.0 cm, lorate. Scapes c 45 cm long. Inflorescence of racemes c 5 cm long, densely flowered. Flowers c 25, brownish-purple, pedicellate. Capsules truncate, trilocular. Seeds broadly elliptic.

*Fls. & Frts.* : March-July.

*Illus.* : Deb & Dasgupta, *op. cit.*

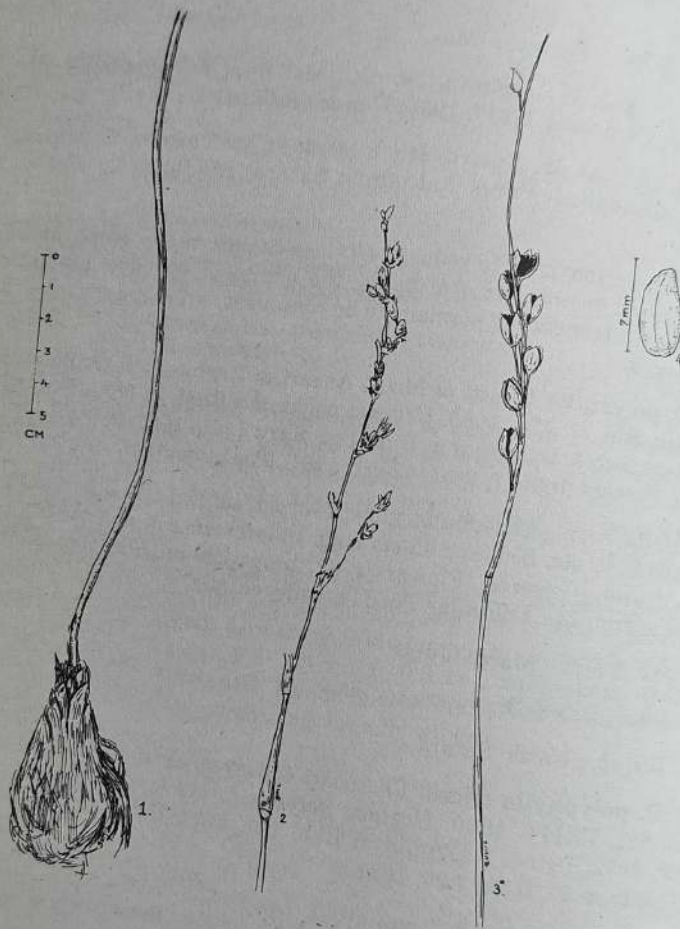
*Distrib.* : Nasik; Satara.

**D. polyphylla** (Hook. f.) Ansari & Raghavan in J. Bombay nat. Hist. Soc. 77:174. 1980. *Urginea polyphylla* Hook. f. Fl. Brit. India 6:348. 1892; Deb & Dasgupta in Bull. Bot. Surv. India 16:123. (1974) 1977 & Fasc. Fl. India 7:20. 1981.

Bulbs 2.0-4.5 x 2-4 cm, ovoid. Leaves 20-25 x 2.5 cm, filiform, involute at margins. Scapes longer than leaves. Racemes 6-flowered. Flowers suberect.

*Distrib.* : Endemic to Deccan peninsula.

*Note* : It has been included on the authority of Hook. f. (*op. cit.*) and Deb & Dasgupta (*op. cit.*).



*Drimia polyantha* (Blatt. & McC.) Ansari & Raghavan  
1. Bulb 2. Inflorescence 3. Fruit 4. Seed

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spurred;  
cm long.

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1. Peria

3. :

3. :

**D. razii** Ansari in J. Bombay nat. Hist. Soc. 78:572, figs. 1-8. 1981.

Herbs, scapigerous; bulbs 5-7 x 3-4 cm, ovate or subglobose. Leaves (after flowering) 20-25 x 0.2-0.3 cm, narrowly linear, erect, ascending, fleshy, grooved above. Scapes up to 15 cm long. Racemes shorter than leaves. Flowers ascending, perianth lobes reflexed; bracts spurred; perianth 6 in 2 whorls, elliptic-oblong or oblong. Capsules c 1.0 cm long. Seeds broadly ovate or subglobose, winged, black.

*Fls. & Frts.* : March-April.

*Illus.* : Ansari, *op. cit.*

*Distrib.* : Rare on exposed rocky areas and gravelly slopes. Pune.

GLORIOSA L.

**Gloriosa superba** L. Sp. Pl. 305. 1753; Hook. f. Fl. Brit. India 6:358. 1892; Cooke, Fl. Pres. Bombay 3: 274. 1958 (Repr. ed.). 'Bachnag', 'Kadya-nag', 'Kal-lavi'.

Climbers, herbaceous, perennial. Leaves 6-20 x 0.5-5.0 cm, ovate-lanceolate, more or less sessile, apex acuminate. Flowers large, solitary or in subcorymbose cymes towards end of branches; perianth when young green, at maturity yellowish-green below middle and red above. Capsules c 0.3 cm long, linear-oblong.

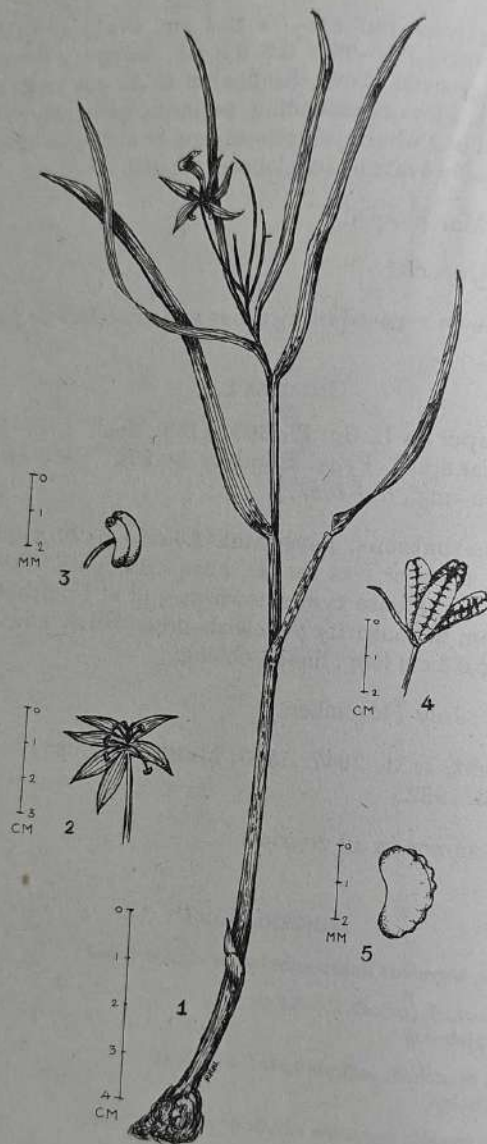
*Fls. & Frts.* : July-November.

*Illus.* : Wight, Ic. t. 2047. 1853; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 743. 1982.

*Distrib.* : Common in all districts.

IPHIGENIA Kunth

1. Perianth purple, segments linear-subulate or elliptic-linear :
  2. Stems branched; pedicels 2.0-5.5 cm long; filaments glabrous ... *I. magnifica*
  2. Stems not branched; pedicels up to 2.5 cm long; filaments hairy ... *I. indica*
1. Perianth white or pink, segments elliptic or oblanceolate :
  3. Flowers white or with a purplish tinge; perianth lobes oblanceolate ... *I. pallida*
  3. Flowers bright pink; perianth lobes broadly elliptic ... *I. stellata*



*Iphigenia pallida* Baker  
1. Habit 2. Flower 3. Anther 4. Fruit 5. Seed

*Iphigenia*  
1843; Hook. f.  
3:275. 1958 (C)  
'Markalai'.

Herbs, 1  
diam., narrow  
stems rigid or  
cm, upper gr  
acuminate, c  
terminal erec  
cm long, 3-g  
subglobose, b

Fls. & F

Illus. :  
Ugemuge, F

Distrib

*I. mag*  
t. 1. (1978)

Herbs.  
lanceolate.  
trilocular, 3

Fls. &

Illus.

Distr  
gravelley  
Nasik; Pu

Note

*I. pa*  
Brit. Indi

Herb  
Leaves 7-  
Capsules  
subglobo

Fls.

Dis  
Sindhud

***Iphigenia indica* (L.) A. Gray** *apud* Kunth, Enum. Pl. 4:213. 1843; Hook. f. Fl. Brit. India 6: 357. 1892; Cooke, Fl. Pres. Bombay 3:275. 1958 (Repr. ed.). *Melanthium indicum* L. Mant. 226. 1771. 'Markalai'.

Herbs, 12–30 cm high, erect; corms subglobose, 1.2–1.75 cm in diam., narrowed into a short neck, tunicate with pale brown sheaths; stems rigid or flexuous. Leaves alternate, few, sessile, 15–20 x 0.43–1.2 cm, upper gradually smaller, all narrowly linear or linear-lanceolate, acuminate, coriaceous, base sheathing. Flowers few or many in a terminal erect raceme. Capsules oblong-ellipsoid or subobovoid, 1.0–1.5 cm long, 3-grooved, obtuse. Seeds c 0.25 cm in diam., ellipsoid or subglobose, brown.

*Fls. & Frts.* : June–September.

*Illus.* : Matthew, *Illus. Fl. Tamilnadu. Carnatic* 2: t. 744. 1982; Ugemuge, *Fl. Nagpur Dt.* t. 159. 1986.

*Distrib.* : Common in all districts.

***I. magnifica* Ansari & Rolla Rao** in Bull. Bot. Surv. India 20:162, t. 1. (1978) 1979.

Herbs, up to 30 cm high, erect. Leaves 15–18 x 0.2–0.3 cm, linear-lanceolate. Capsules c 1.2 cm long, subglobose or ellipsoid-oblong, trilocular, 3-valved, many seeded. Seeds subglobose, brown.

*Fls. & Frts.* : September–December.

*Illus.* : Ansari & Rolla Rao, *op. cit.*

*Distrib.* : Vulnerable, on exposed grassy slopes of the hills on gravelley soil with c 150 cm annual rainfall. Akola; Dhule; Kolhapur; Nasik; Pune; Raigad; Ratnagiri.

*Note* : Endemic to Maharashtra.

***I. pallida* Baker** in J. Linn. Soc. Bot. 17: 451. 1879; Hook.f. Fl. Brit. India 6: 357. 1892; Cooke, Fl. Pres. Bombay 3:275.1958 (Repr. ed.).

Herbs, 9–10 cm high, erect; corms c 1.3 x 0.7 cm, ovoid, tunicate. Leaves 7–10 x 0.2 cm, linear, upper smaller. Flowers 1–4, corymbose. Capsules 1.2–1.8 x 0.5–0.7 cm, obovoid, green. Seeds c 0.1 x 0.1 cm, subglobose.

*Fls. & Frts.* : July–September.

*Distrib.* : Akola; Kolhapur; Nagpur; Nasik; Pune; Satara; Sindhudurg.

**I. stellata** Blatt. in J. Bombay nat. Hist. Soc. 32: 734. 1928 *emend*  
Ansari & Rolla Rao in Bull. Bot. Surv. India 15: 120, f. 1-7b. 1972.

Herbs, c 15 cm high; corms ovate-subglobose. Leaves 4-6, 8-14 x 0.9-1.0 cm, grass-like, linear to linear-lanceolate, apex acute or mucronate, narrowed at base. Flowers 2-4 (-6) in short racemes. Capsules 0.8-1.2 cm long, subglobose or obovoid, deeply grooved. Seeds subglobose-ovoid, brownish-black.

*Fls. & Frts.* : June-September.

*Illus.* : Ansari & Rolla Rao, *op.cit.*

*Distrib.* : Vulnerable; in plateaus and in open grazed grasslands with gravelly, well-drained soil on gentle slopy areas. It needs c 250 cm rainfall with cool and misty climate in altitude of c 1500 m. Kolhapur; Pune; Satara; Sindhudurg.

OPHIPOGON Ker-Gawl. (*nom. cons.*)

**Ophiopogon intermedius** D. Don var. **pauciflora** Hook. f. Fl. Brit. India 6: 269. 1892; Cooke, Fl. Pres. Bombay 3: 252. 1958 (Repr. ed.).

Stems short; rootstocks short. Leaves radical, 20-50 x 0.43-0.75 cm, linear, apex acute or acuminate. Flowers white, rather distant, in lax racemes, 2.5-5.0 cm long, on slender scapes, 10-25 cm long. Berries c 0.4 cm across, subglobose. Seeds subglobose, crowded around and almost concealing the small withering pericarp.

*Fls. & Frts.* : Throughout the year.

*Illus.* : *O. indicus* Wight, Ic. t. 2050. 1853.

*Distrib.* : Kolhapur; Ratnagiri; Satara (Cooke, *op.cit.*); Sindhudurg.

SCILLA L.

1. Bulbs imbricated; racemes with numerous (more than 40) flowers; pedicels 0.4-1.0 cm long, filiform; bracts bifid; ovules 1 per locule

1. Bulbs tunicated; racemes less than 40-flowered; pedicels 1.0-1.5 cm long, stout; bracts paired; ovules 3-6 per locule

... *S. hyacinthina*

... *S. viridis*

**Scilla hyacinthina** (Roth) Mc Bride in Contrib. Gray Herb. 2, 56: 14. 1918; Deb & Dasgupta in Bull. Bot. Surv. India 17: 46. (1975) 1978 & in Fasc. Fl. India 7: 14, f. 28-33. 1981. *Ledbouria hyacinthina* Roth,

Nov. Pl. Sp. 195. 1821. *Scilla indica* (Wight) Baker in Saund. Refug. Bot. 3. App. 12. 1870 & J. Linn. Soc. Bot. 13: 250. 1872 non Roxb. 1832 (which is *Urginea indica* Roxb.); Hook.f. Fl. Brit. India 6: 348. 1892; Cooke, Fl. Pres. Bombay 3: 276. 1958 (Repr. ed.).

Herbs, scapigerous; bulbs 1.5–5.0 x 0.5–3.0 cm, ovoid or subglobose. Leaves 2–5, 3.7–25.0 x 0.8–3.0 cm, linear to lanceolate, ovate or obovate, acute or obtuse. Scapes 3–12 cm long. Flowers purple or pink. Capsules obovoid, unequally trilobed. Seeds obovoid.

Fls. & Frts. : June–September.

Illus. : Wight. Ic. t. 2040. 1853 (*Ledbouria hyacinthina*); Deb & Dasgupta, op.cit.; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 745. 1982.

Distrib. : Akola; Amaravati; Bombay; Buldhana; Chandrapur; Dhule; Kolhapur; Nagpur; Nasik; Osmanabad; Pune; Ratnagiri; Satara; Sindhudurg; Thane; Yavatmal.

**S. viridis** Blatt. & Hallb. in J. Indian Bot. 2: 52. 1921; Deb & Dasgupta in Bull. Bot. Surv. India 14: 45. (1975) 1978 & Fasc. Fl. India 7: 15. 1981.

Herbs, perennial; bulbs c 5 x 4 cm, ovoid-globose, pale green. Leaves hysteranthous. Scapes c 50 cm high. Flowers c 1.5 cm in diam., pinkish; bracts deciduous.

Fls. & Frts. : September–March.

Distrib. : Endemic to Maharashtra. Endangered. Pune.

Note : Known only from a single gathering and not recollected during the last 70 years.

#### CULTIVATED SPECIES :

**Allium cepa** L. Sp. Pl. 300. 1753; Hook. f. Fl. Brit. India 6: 337. 1892; Cooke, Fl. Pres. Bombay 3: 284. 1958 (Repr. ed.). 'Kanda', 'Paiz'.

Perennials; rootstocks bulbous. Leaves 30–60 cm long, fistular, subdistichous, acute. Scapes 30–90 cm long, hollow, rounded, with many-flowered umbels at apex; perianth white. Capsules c 0.25 cm in diam., membranous.

Fls. & Frts. : January–March.

Distrib. : Widely cultivated. Ahmednagar; Buldhana; Chandrapur; Nagpur; Nasik; Osmanabad; Pune; Satara; Sindhudurg; Thane.

**A. sativum** L. Sp. Pl. 296. 1753; Hook. f. Fl. Brit. India 6: 337. 1892; Cooke, Fl. Pres. Bombay 3: 284. 1958 (Repr. ed.). 'Lasun', 'Lasun'.

Bulbs with membranous outer scales in axils of which are 10-12 fleshy bulbs. Leaves 20-40 cm long, linear, flat; sheaths c half as long as blades. Umbels subglobose at ends of slender scapes, c 60 cm long. Perianth white or pinkish. Capsules oblong-ovoid, membranous.

*Fls. & Frts.* : February-April.

*Distrib.* : Cultivated. Ahmednagar; Nagpur; Osmanabad; Pune; Thane.

**Cordyline terminalis** Kunth, Enum. Pl. 5:25. 1850; Hook. f. Fl. Brit. India 6:331. 1892.

Shrubs, 2-3 m tall, erect. Leaves distichous, 30-40 x 5-10 cm, oblong-lanceolate, narrowed into channelled clasping petiole, rather abruptly narrowed at apex into aristate point. Flowers white or purplish, subspicate or racemed on branches of a large, erect, simple-branched panicles, 30-60 cm high. Berries c 0.8 cm in diam., usually 1-seeded.

*Distrib.* : Cultivated. Osmanabad.

**Lilium wallichianum** Schultes f. var. **neilgherrense** (Wight) Hara in Univ. Mus. Tokyo 8: 132. 1973; Dasgupta & Deb in Candollea 39: 492. 1984. *L. neilgherrense* Wight, Ic. tt. 2031 & 2032. 1853; Hook. f. Fl. Brit. India 6: 350. 1892; Cooke, Fl. Pres. Bombay 3: 284. 1958 (Repr. ed.).

Herbs, c 1 m high; bulbs globose. Leaves sessile, alternate, 7-17 x 1.5-2.0 cm, lanceolate, thin-coriaceous, 5-7-nerved below, glandular along nerves. Umbels terminal, 3-flowered, rarely flower solitary. Flowers white with greenish tinge. Capsules c 4.0 x 0.5 cm, oblong, 6-angled. Seeds many, terete.

*Fls. & Frts.* : September-October.

*Illus.* : Wight, *op.cit.*; Wight, *op.cit.* tt. 2033 & 2034 (*L. tubiflorum*).

*Distrib.* : Grown in gardens. Pune.

**Sansevieria roxburghiana** Schult. & Schult. f. in R. & S. Syst. Veg. 7: 357, f. 12 D-E. 1829; Hook. f. Fl. Brit. India 6: 271. 1892. *S. zeylanica* Roxb. Pl. Cor. t. 184. 1804 non Willd. 1799; Hook. f. *op.cit.* 270; Cooke, Fl. Pres. Bombay 3: 252. 1958 (Repr. ed.). 'Murba', 'Murva', 'Naghin'.

Herbs, scapigerous; stems short. Leaves 8-9 in a tuft, 72-90 x 2.5 cm, broad towards the middle, suberect, rigid, pale green with transverse bands of dark green, c 0.63 cm thick, with a terete, rigid spine-like tip, 2.5-5.0 cm long. Flowers greenish-white tinged with violet, in fascicles of 3-6 on long racemes, 30-60 cm long.

*Fls.* : January-June.

*Illus.* : Matthew, *Illus. Fl. Tamilnadu Carnatic* 2: t. 737. 1982.

*Distrib.* : Grown in gardens. Ahmednagar; Nagpur; Osmanabad.

*S. thyrsoflora* Thunb. *Prodr. Pl. Cap.* 65. 1939; Shah & Badrinath in *J. Econ. Tax. Bot.* 6: 137. 1985.

Herbs, perennial, stout, tufted. Leaves few in a cluster, 30-45 x 8.7 cm, lanceolate, acute or obtuse, flat or nearly so but tapering into a channelled petiole. Flowers 2-6 together in a spike-like raceme, greenish-white, fragrant. Berries dark-green, globose.

*Fls. & Frts.* : January-February.

*Distrib.* : Planted as an ornamental. Sindhudurg; Thane (Shah & Badrinath, *op. cit.*).

## SMILACACEAE

### SMILAX L.

- |  |     |                      |
|--|-----|----------------------|
| 1. Petiolar wings well developed, 0.6 cm broad   | ... | <i>S. perfoliata</i> |
| 1. Petiolar wings weakly developed, 0.5 cm or less broad :   |     |                      |
| 2. Leaf blades of flowering branches orbicular-ovate, more than 9 cm broad and 10 cm long, 5-7-costate                   | ... | <i>S. ovalifolia</i> |
| 2. Leaf blades of flowering branches broadly ovate or broadly elliptic, less than 9 cm broad and 10 cm long, 3-5-costate | ... | <i>S. zeylanica</i>  |

*Smilax ovalifolia* Roxb. *Fl. Ind.* 3: 794. 1832; T. Koyama in *Adv. Front. Pl. Sci.* 4: 48, f. 1. 1963. *S. macrophylla* Roxb. *op. cit.* 793 non Willd. 1805; Hook. f. *Fl. Brit. India* 6: 310. 1892; Cooke, *Fl. Pres. Bombay* 3: 271. 1958 (Repr. ed.); T. Koyama in *Quart. J. Taiwan Mus.* 13: 58. 1960; Ghazanfar in Nasir & Ali, *Fl. W. Pak.* 107: 5, f. 1. J. 1977. 'Ghotvel'.

Coarse scandent vine; flowering branches terete, dull, straight or slightly zigzag, internodes 5-15 x 0.4-0.5 cm, smooth or sparsely prickly. Leaves thick, herbaceous when young coriaceous at length,

abruptly contracted to a short cuneate base and often to a mucronate apex; petioles 1.6–3.0 cm long. Umbels 1–3 on an axis, 1.5–4.0 cm long, many-flowered. Berries 0.9–1.2 cm in diam., globose, 1(–2)–seeded.

*Fls. & Frts.* : August.

*Illus.* : T. Koyama, *op.cit.*; Ghazanfar in Nasir & Ali, *op.cit.*

*Distrib.* : Raigad (T.Koyama, *op.cit.*); Satara (Cooke, *op.cit.*).

*S. perfoliata* Lour. Fl. Cochinch. 622. 1790; T. Koyama in Quart. J. Taiwan Mus. 13:38. 1960 & in Adv. Front. Pl. Sci. 4: 59. 1963. *S. prolifera* Roxb. Fl. Ind. 3: 795. 1832; Hook.f. Fl. Brit. India 6: 312. 1892.

Robust, climbing vine with woody stems c 1 cm thick, flowering branches straight, terete, smooth or sparsely prickly, internodes 4–9 x 0.15–0.4 cm. Leaves variable in shape and size, 7–18 x 3–13 cm, ovate or ovate-elliptic, rounded or contracted at base, acute or rounded at apex; petioles 1.5–4.0 cm long. Umbels many, verticillate in 2–6 at 4–6 nodes of a thick axis, 9–15 cm long. Berries c 1.2 cm in diam.

*Fls. & Frts.* : January–March.

*Illus.* : Gandhi in Sald. & Nicols. Fl. Hassan Dt. 805, f. 120, B-Bb. 1976; Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 616. 1988.

*Distrib.* : Rare. Nagpur.

*S. zeylanica* L. Sp.Pl. 1429. 1753; Hook.f. Fl. Brit. India 6:309. 1892; T. Koyama in Adv. Front. Pl. Sci. 4: 50. 1963.

Scandent vines; flowering branches slender, 4-angular, smooth or sparsely prickly, internodes 2.5–5.0 cm long. Leaves rounded or truncate at base, rounded with a short cusp at apex; petioles 0.9–1.5 cm long. Umbels 1–3 on short axis c 1.5 cm long; receptacles 2–40-flowered. Berries 0.6–0.8 cm in diam.

*Fls. & Frts.* : June–February.

*Illus.* : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 746. 1982.

*Distrib.* : Amaravati; Bhandara; Bombay; Chandrapur; Kolhapur; Pune; Ratnagiri; Satara; Sindhudurg; Thane.

## PONTEDERIACEAE

1. Flowers pedicelled; perianth actinomorphic, free, posterior tepal without a discoloured blotch; one stamen longer; filaments horned on one side, glabrous

...

MONOCHORIA

1. Flowers sessile; perianth zygomorphic, gamophyllous, posterior tepal with a discoloured blotch; stamens 6, three much longer than others, filaments not horned, hairy

*Eichhornia* Kunth (*nom. cons.*)

*EICHHORNIA*

***Eichhornia crassipes*** (Mart.) Solms in DC. Monogr. Phan. 4: 527. 1883; Backer in Steenis, Fl. Males. 1, 4: 259, f. 2 & 3. 1951; Subr. Aquat. Ang. 70. 1962. *Pontederia crassipes* Mart. Nov. Gen. Sp. Pl. 1: 9, t. 4. 1823.

Herbs, 30–50 cm high; main stems short, leafy; roots fibrous, long, pinkish. Leaves 7–25 x 7–25 cm, obovate, apex rounded or obtuse, base cordate; petioles swollen. Inflorescence of spikes, 15–30 cm long, enclosed by irregular, mucilaginous sheaths; flowers 8–35, lilac or pale violet, funnel-shaped, trimorphic, heterostyled. Capsules ovoid.

*Fls. & Frts.* : July–November.

*Illus.* : Backer in Steenis, *op.cit.*; Subr. *op.cit.* 160, f. 48; Ghazanfar in Nasir & Ali, Fl. W. Pak. 114:2, f. 1, E–H. 1977; Matthew, *Illus. Fl. Tamilnadu Carnatic* 2: t. 747. 1982.

*Distrib.* : Floating in stagnant or slow moving waters. Ahmednagar; Bombay; Kolhapur; Nagpur; Pune; Raigad; Thane.

MONOCHORIA K. B. Presl

1. Rootstocks creeping, branched; leaf-base sagittate or hastate or rarely cordate; basal lobes divergent ... *M. hastata*
1. Rootstocks suberect or oblique, usually short; leaf-base obtuse, rounded, truncate or cordate; basal lobes if present, broadly rounded ... *M. vaginalis*

***Monochoria hastata*** (L.) Solms in DC. Monogr. Phan. 4: 523. 1883; Backer in Steenis, Fl. Males. 1, 4: 258, f.1. 1951; Subr. Aquat. Ang. 69. 1962. *Pontederia hastata* L. Sp. Pl. 288. 1753. *Monochoria hastaeifolia* K.B. Presl, Rel. Haenk. 1: 128. 1827; Hook. f. Fl. Brit. India 6: 362. 1892; Cooke, Fl. Pres. Bombay 3:286. 1958 (Repr. ed.).

Herbs, c 125 cm high; stems erect or obliquely erect; rootstock elongate. Leaves 10–20 x 5–15 cm, triangular-ovate. Flowers purplish-blue in racemes or umbels. Capsules c 1 cm long, ellipsoid, membranous. Seeds oblong, brown with 10 thin longitudinal ribs, densely and finely transversely striate.

*Fls. & Frts.* : November–December.

*Illus.* : Backer in Steenis, *op. cit.*; Subr. *op. cit.* 158, f. 46.

*Distrib.* : In margins of fresh water pools, ponds and wet rice fields. Ahmednagar; Bombay; Pune; Sholapur.

**M. vaginalis** (Burm. f.) K.B. Presl, Rel. Haenk. 1: 128. 1827; Hook. f. Fl. Brit. India 6: 363. 1832; Cooke, Fl. Pres. Bombay 3: 286. 1958 (Repr. ed.); Backer in Steenis, Fl. Males. 1, 4: 256. 1951; Subr. Aquat. Ang. 69. 1962. *Pontederia vaginalis* Burm. f. Fl. Ind. 80. 1768. *Monochoria vaginalis* var. *plantaginea* (Roxb.) Solms in DC. Monogr. Phan. 4: 524. 1883; Hook. f. *op.cit.*

Herbs, 5-50 cm high, perennial; stems erect or obliquely erect. Leaves 4-8 x 3-4 cm, broadly ovate or ovate-oblong, apex acute to acuminate. Racemes 3-25-flowered. Flowers dark blue, apex acute to long, ellipsoid. Seeds c 0.1 cm long, brown, oblong, elongate, ribbed longitudinally, transversely striate.

*Fls. & Frts.* : May-September.

*Illus.* : Subr. *op.cit.* 159, f. 47; Ghazanfar in Nasir & Ali, Fl. W. Pak. 114: 2, f. 1, A-D. 1977; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 748. 1982.

*Distrib.* : In margins of fresh water pools, ponds and wet rice fields. Bhandara; Chandrapur; Kolhapur; Nagpur; Raigad; Ratnagiri; Sindhudurg; Thane; Yavatmal.

## XYRIDACEAE

### XYRIS L.

1. Dried leaves with numerous short, transverse, prominent ribs connecting the longitudinal veins

1. Leaves not as above

... *X. indica*

... *X. pauciflora*

**Xyris indica** L. Sp. Pl. 62. 1753; Hook. f. Fl. Brit. India 6: 364. 1892; Cooke, Fl. Pres. Bombay 3: 287. 1958 (Repr. ed.); van Royen in Steenis, Fl. Males. 1, 4: 373, f. 1N, 4-5. 1953. '*Dadumari*'.

Herbs, scapigerous, 15-50 cm high, robust, perennial. Leaves 5-60 x 0.3-1.0 cm, radical, linear-ensiform, apex acute to obtuse; sheath 8-30 cm long. Peduncles 20-80 x 0.15-0.3 cm. Heads 0.5-3.5 x 0.5-1.5 cm, ovoid to subglobose or ellipsoid. Flowers bright yellow in spikes. Capsules 0.3-0.4 cm long, ovoid.

*Fls. & Frts.* : October-January.

*Illus.* : van Royen in Steenis, *op. cit.*

*Distrib.* : In salt marshes. Ratnagiri; Sindhudurg.

**X. pauciflora** Willd. Phytogr. 1: 2, t. 1, f. 1. 1794; Hook. f. Fl. Brit. India 6: 365. 1892; van Royen in Steenis, Fl. Males. 1, 4: 371, f. 1H, 3. 1953.

Herbs, 8–16 cm tall; rootstocks bulbous. Leaves 3–25 x 0.1–0.2 cm, narrowly linear, apex acute to acuminate, sparsely papillate at either side; sheath 1.5–7.0 cm long with a scabrous keel. Peduncles twisted, 4–40 x 0.1–0.15 cm. Heads 0.3–0.9 x 0.2–0.8 cm, ovoid to globose. Flowers yellow. Capsules obovoid, 3-sided, 0.2–0.3 x 0.1 cm.

*Fls. & Frts.* : October–February.

*Illus.* : van Royen in Steenis, *op.cit.*

*Distrib.* : Rare in plains in open moist places amidst grasses. Chandrapur; Sindhudurg.

### COMMELINACEAE

- |   |     |              |
|---|-----|--------------|
| 1. Fertile stamens 3–2, staminodes 1–4 :                        |     |              |
| 2. Fruits indehiscent   | ... | POLLIA       |
| 2. Fruits dehiscent, 2–3-valved :                               |     |              |
| 3. Cymes solitary, included in a spathe                         | ... | COMMELINA    |
| 3. Cymes panicled, naked, rarely in a spathe                    | ... | MURDANNIA    |
| 1. Fertile stamens 6 (rarely 5), staminodes absent :            |     |              |
| 4. Petals free or nearly so                                     | ... | FLOSCOPA     |
| 4. Petals united into a tube below :                            |     |              |
| 5. Cymes enclosed in biseriate, falcate, imbricating bracteoles | ... | CYANOTIS     |
| 5. Bracteoles not as above :                                    |     |              |
| 6. Flowers in terminal, few-flowered cymules                    | ... | BELOSYNAPSIS |
| 6. Flowers axillary, clustered in sheaths of leaves             | ... | TONNINGIA    |

### BELOSYNAPSIS Hassk.

**Belosynapsis vivipara** (Dalz.) Sprague ex C.E.C. Fischer in Kew Bull. 1928: 254. 1928 & in Gamble, Fl. Pres. Madras 1551. 1931 [3: 1082. 1957 (Repr.ed.)]. *Cyanotis vivipara* Dalz. in Kew J. Bot. 3:226. 1851; Hook. f. Fl. Brit. India 6: 388. 1892; Cooke, Fl. Pres. Bombay 3: 305. 1958 (Repr. ed.).

Epiphytic, subscapigerous, clothed with scattered rufous spreading hairs; rootstocks small, with tufts of pilose, radical, sessile, linear, acute leaves, 5.0–12.5 x 0.6–1.0 cm, clothed and ciliate with rufous hairs. Scapes many from the root, rooting below, viviparous at apex, with several small oblong-lanceolate acute leaves, 0.6–1.2 cm long. Flowers white. Capsules c 0.33 x 0.13 cm, oblong, obtuse, rufous-hairy, valves much recurved after dehiscence. Seeds cylindric, smooth.

*Fls. & Frts.* : August–September.

*Illus.* : Kammathy in Nayar & Sastry, Red Data Book Ind. Pl. 1: 124, f.1987.

*Distrib.* : Vulnerable due to felling and opening up of forests and habitat loss. 'Konkan' (Cooke, *op.cit.*).

*Notes* : According to Kammathy in Nayar & Sastry (Red Data Book Ind. Pl. 1: 123.1987) Dalzell first collected it from Sahyadri hills at Parva Ghat in Maharashtra. Since then the species has been collected from other evergreen forests of 'W. Ghats'. Blatter described the collections of this species from Sahyadri hill southwards. It is endemic to Western ghats. It is epiphytic on densely moss-covered tree-trunks and branches in cool shady evergreen forests. The species forms small populations mostly on the shady surfaces of tree trunks and branches.

#### COMMELINA L.

1. All the cells of the ovary 1-ovuled :
  2. Capsule 2-celled ... *C. suffruticosa*
  2. Capsule 3-celled :
    3. Spathes pedunculate ... *C. paleata*
    3. Spathes sessile or subsessile :
      4. Capsules subequally 3-valved; seeds free in the cell ... *C. maculata*
      4. Capsules 2-valved, the dorsal cell indehiscent, often scabrid; seeds adnate to the cell ... *C. erecta*
1. Two anticus cells of the ovary 2-ovuled, posticous cell 1-ovuled or obsolete :
  5. Capsules 2-celled, rarely with a dorsal cell which is empty or contains an imperfect seed; lateral cells 1-2-seeded :
    6. Capsules constricted in the middle, bicuspidate; seeds not appendaged ... *C. clavata*
    6. Capsules not constricted in the middle, not bicuspidate; seeds appendaged at each end ... *C. attenuata*

5. Capsule 3-  
posticous c

7. Postic

8. s

8. s

7. Posti

10.

10.

Comm  
Hook. f. F  
1958 (Repr

Herb  
cm, 1.8–5  
caudate–li  
Spathes 1  
caudate–  
Capsules c

*Fls.* c

*Disti*  
Osmanaba

*C. bo*  
1892; Coo

Herb  
Leaves 2.

5. Capsule 3-celled, anticus cells 0-2-seeded, posticus cells 1-seeded :
  7. Posticus cell not keeled, indehiscent :
    8. Stems erect; peduncle of spathe reaching 5 cm long; flowers yellow, drying blue ... *C. hirsuta*
    8. Stems diffuse, rooting at nodes; peduncle of spathe less than 1.2 cm long; flowers blue : ... *C. kotschyi*
    9. Capsules with distinct loculi and seeds ... *C. forsskalaei*
    9. Capsules not as above ... *C. benghalensis*
  7. Posticus cell keeled, dehiscent at length :
    10. Spathe funnel-shaped or hooded ... *C. subulata*
    10. Spathe complicate, margins free or connate at base only : ... *C. diffusa*
    11. Spathes sessile ... *C. longifolia*
    11. Spathes pedunculate : ... *C. hasskarlii*
    12. Seeds reticulate, cylindric; spathes somewhat cordate at base
    12. Seeds smooth, truncate at one end; spathes always rounded at base :
    13. Branches of cyme equal; seeds appendaged
    13. Branches of cyme unequal; seeds not appendaged

***Commelina attenuata*** Koen. ex Vahl, Enum. Pl. 2: 168. 1806; Hook. f. Fl. Brit. India 6: 372. 1892; Cooke, Fl. Pres. Bombay 3: 293. 1958 (Repr. ed.).

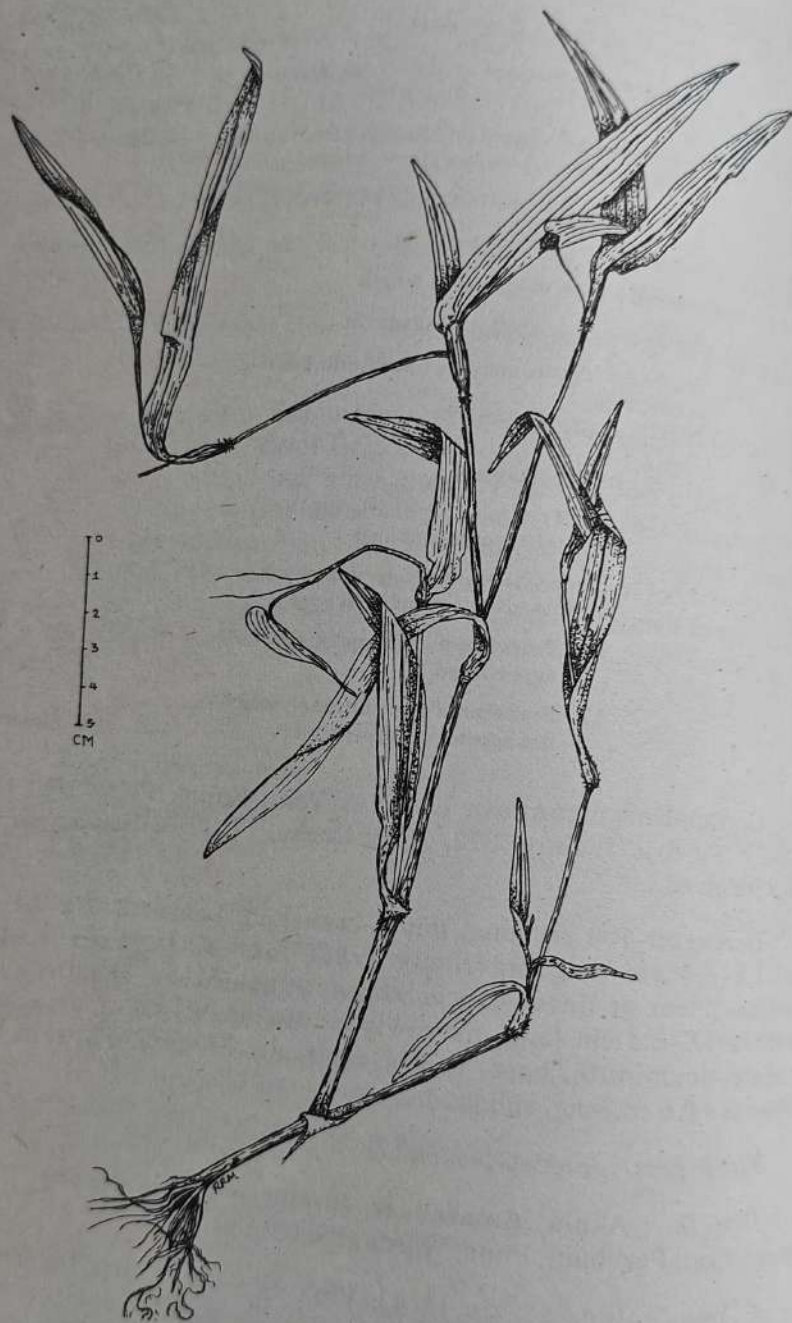
Herbs, 30-100 cm long, much-branched. Leaves 3-7 x 0.4-1.25 cm, 1.8-3.4 cm long, narrowly ovate-lanceolate, apex acute to caudate-linear or linear-lanceolate, apex subobtuse; sheaths ciliate. Spathes 1.8-3.4 cm long, narrowly ovate-lanceolate, apex acute to caudate-acuminate, base deeply sagittate-cordate. Flowers blue. Capsules c 0.6 cm long, subquadrate.

**Fls. & Frts.** : August-November.

**Distrib.** : Akola; Amaravati; Bhandara; Chandrapur; Nasik; Osmanabad; Parbhani; Pune; Wardha; Yavatmal.

***C. benghalensis*** L. Sp. Pl. 41. 1753; Hook. f. Fl. Brit. India 6: 370. 1892; Cooke, Fl. Pres. Bombay 3: 291. 1958 (Repr. ed.). 'Kena'.

Herbs, c 1 m long; branches diffuse or suberect, glabrescent. Leaves 2.5-9.0 x 1-5 cm, ovate or ovate-oblong, base inequilateral,



*Commelina attenuata* Koen. ex Vahl

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margins ciliate or rufous-hairy. Spathes auricled on one side, pubescent. Flowers blue. Capsules c 0.6 cm long, pyriform. Seeds oblong, pitted.

*Fls. & Frts.* : June–December.

*Illus.* : Wight, Ic. t. 2065. 1853; Mahesh. *Illus. Fl. Delhi* f. 203. 1966; Matthew, *Illus. Fl. Tamilnadu Carnatic 2*: t. 751. 1982.

*Distrib.* : Common in all districts, occurring in fields, along canal and bunds.

**C. clavata** C.B.Cl. *Commel. & Cyrt. Beng.* 15, t.5.1874; Hook. f. *Fl. Brit. India* 6: 371. 1892; Cooke, *Fl. Pres. Bombay* 3: 292. 1958 (Repr.ed.).

Stems 30–90 cm long, sparingly branched; branches diffuse, rooting at nodes. Leaves 3.7–7.5 x 0.6–2.0 cm, ovate, elliptic-lanceolate long. Spathes 2–3 cm long, ovate-lanceolate, apex acuminate, base rounded or cordate. Capsules c 0.75 x 0.43 cm, quadrate-oblong, truncately rounded at the ends. Seeds c 0.43 cm long, cylindric, truncate at one end, rounded at the other, reticulately pitted.

*Fls. & Frts.* : September–October.

*Distrib.* : Rare in hilly forests. Raigad.

**C. diffusa** Burm. f. *Fl. Ind.* 18, t. 7, f. 2. 1768; Rolla Rao in *Notes Roy. Bot. Gard. Edinb.* 25: 179.1964; Panigr. & Kammathy in *J. Ind. Bot. Soc.* 43: 299.1964. *C. nudiflora sensu* Hook. f. *Fl. Brit. India* 6: 369. 1892 *non* L. 1753; Cooke, *Fl. Pres. Bombay* 3: 290. 1958 (Repr.ed.). 'Gandologi'.

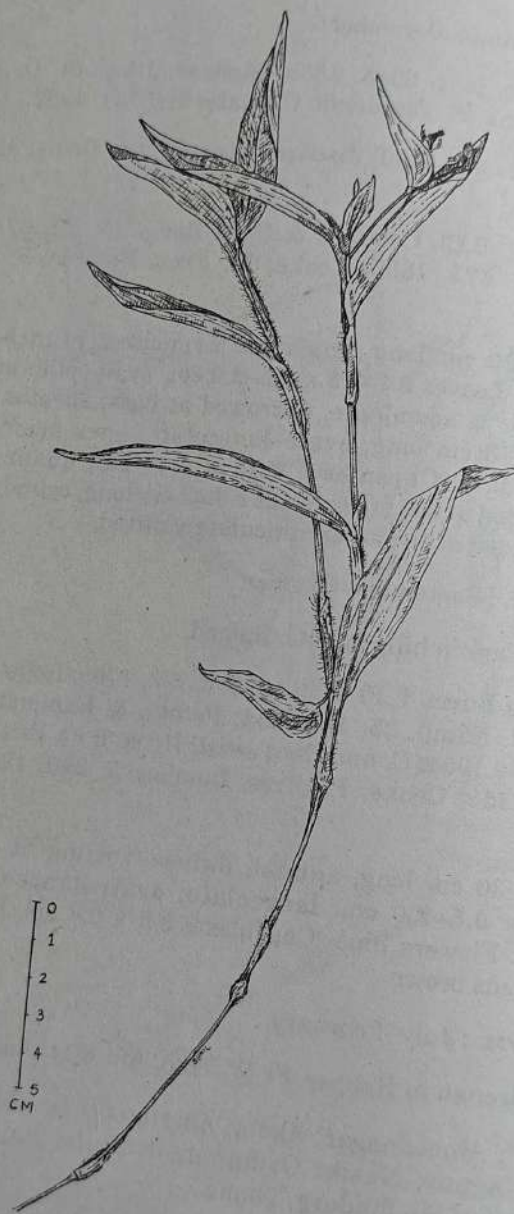
Herbs, c 30 cm long, annual, diffuse, rooting at nodes. Leaves sessile, 2–8 x 0.5–2.0 cm, lanceolate, ovate-lanceolate, ovate or linear-oblong. Flowers blue. Capsules c 0.5 x 0.4 cm, broadly oblong, coriaceous. Seeds brown.

*Fls. & Frts.* : July–February.

*Illus.* : Brenan in Hepper, *Fl. W. Trop. Afr.* 3(1) : 46, f. 332. 1968.

*Distrib.* : Ahmednagar; Akola; Amaravati; Bombay; Chandrapur; Kolhapur; Nagpur; Nasik; Osmanabad; Pune; Raigad; Ratnagiri; Satara; Sholapur; Sindhudurg; Thane.

**C. erecta** L. *Sp. Pl.* 41. 1753; Morton in *J. Linn. Soc. London (Bot.)* 60 (382) : 183. 1967; Rolla Rao in *M.V.M.Patrika* 6: 53. 1971.



*Commelina clavata* C.B.Cl.

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*C. undulata* R. Br. Prodr. 270. 1810; Hook. f. Fl. Brit. India 6: 373. 1892; Rolla Rao in Notes Roy. Bot. Gard. Edinb. 26: 352. 1966. *C. kurzii* C. B. Cl. in J. Linn. Soc. Bot. 11: 444. 1871; Hook. f. op. cit.; Rolla Rao & Kammathy in J. Bombay nat. Hist. Soc. 59: 61, t. 1 (A & D) 1962; Rolla Rao in Blumea 14: 351. 1966. *C. kurzii* var. *glochidea* Hook. f. op. cit. 374. *C. paludosa* Bl. var. *mathewii* (C.B.Cl.) Rolla Rao & Kammathy in Bull. Bot. Surv. India 3: 168. (1961) 1962.

Herbs, c 50 cm high. annual, erect or suberect, dichotomously branched, hairy or glabrate. Leaves 5.5–15.0 x 1.5–4.0 cm, lanceolate or ovate-lanceolate, pubescent beneath; sheaths ciliate. Spathes 1.8–2.2 cm broad, cucullate, broadly cordate, recurved. Flowers blue. Capsules c 0.4 cm long, ellipsoid, apiculate. Seeds oblong, blackish-brown.

Fls. & Frts. : August–October.

Illus. : Rolla Rao & Kammathy, op. cit.; Mahesh. Illus. Fl. Delhi f. 202. 1966 (*C. kurzii*).

Distrib. : Common in all districts.

*C. forsskalaei* Vahl, Enum. Pl. 2: 172. 1806; Hook. f. Fl. Brit. India 6: 371. 1892; Cooke, Fl. Pres. Bombay 3: 292. 1958 (Repr. ed.). 'Canpet'.

Herbs; stems slender, rooting at lower nodes. Leaves 1.5–4.5 x 0.5–1.0 cm, linear-oblong or slightly elliptic, sparsely hairy, margins wavy; sheaths c 1 cm long, pubescent. Spathes complicated or hooded, broadly ovate, c 0.7 x 1.2 cm. Flowers blue. Capsules c 0.4 x 0.3 cm, oblong, laterally compressed. Seeds orange-brown.

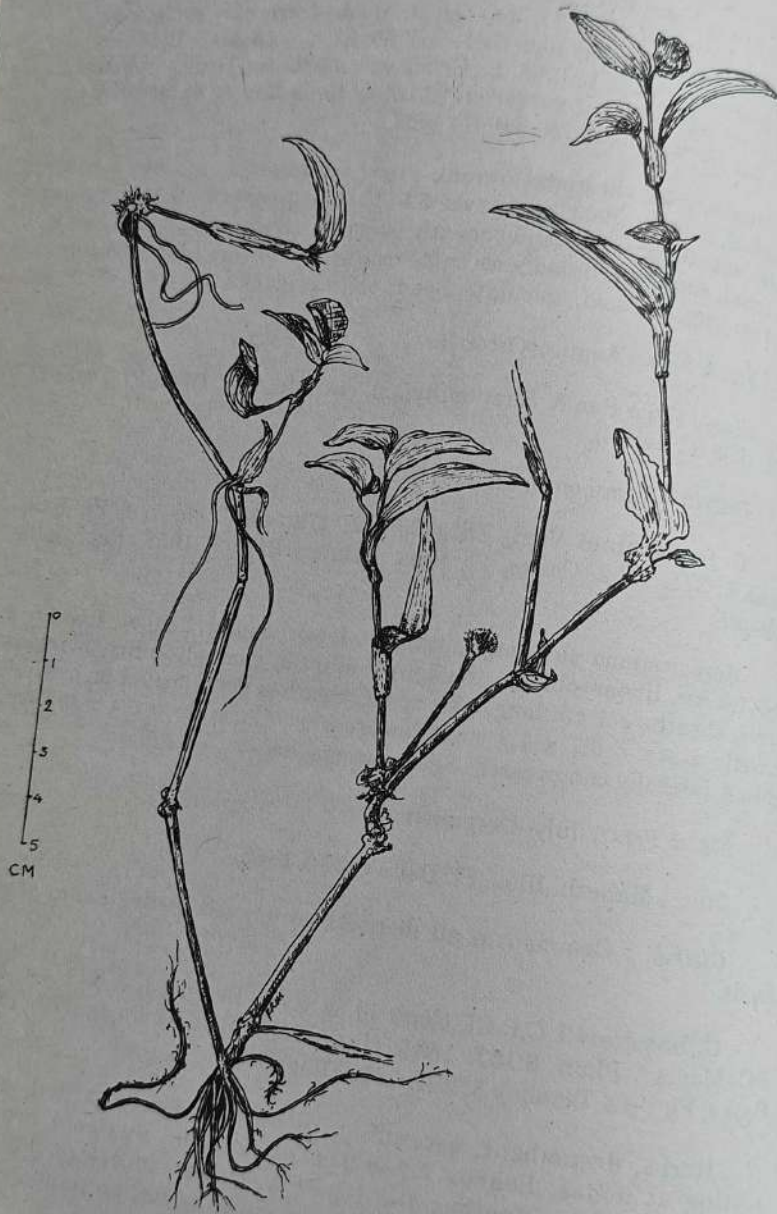
Fls. & Frts. : July–December.

Illus. : Mahesh. Illus. Fl. Delhi f. 204. 1966.

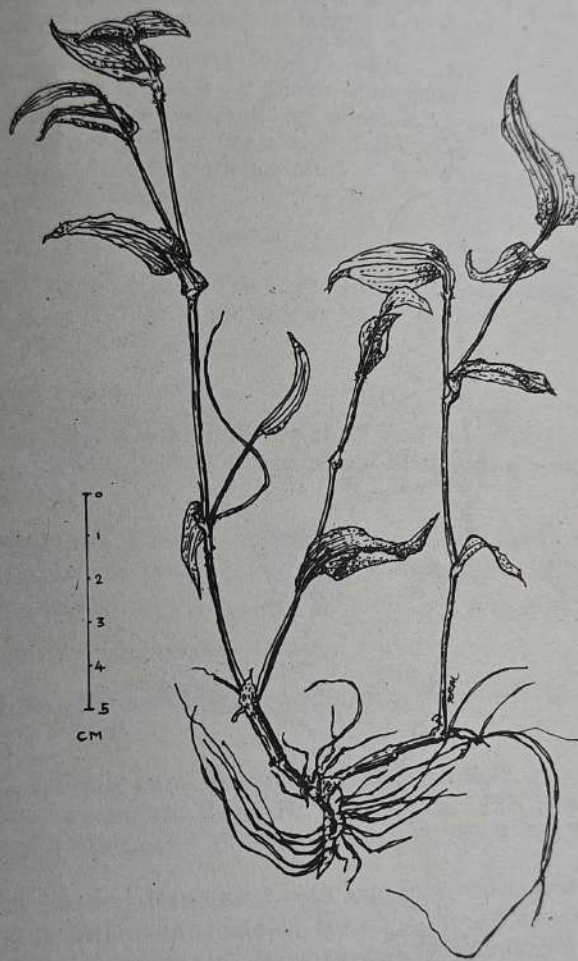
Distrib. : Common in all districts as a weed in fields and waste lands.

*C. hasskarlii* C.B.Cl. Commel. & Cyrt. Beng. 13, t. 3. 1874 & in DC. Monogr. Phan. 3:157. 1881; Hook. f. Fl. Brit. India 6: 370. 1892; Cooke, Fl. Pres. Bombay 3: 291. 1958 (Repr. ed.).

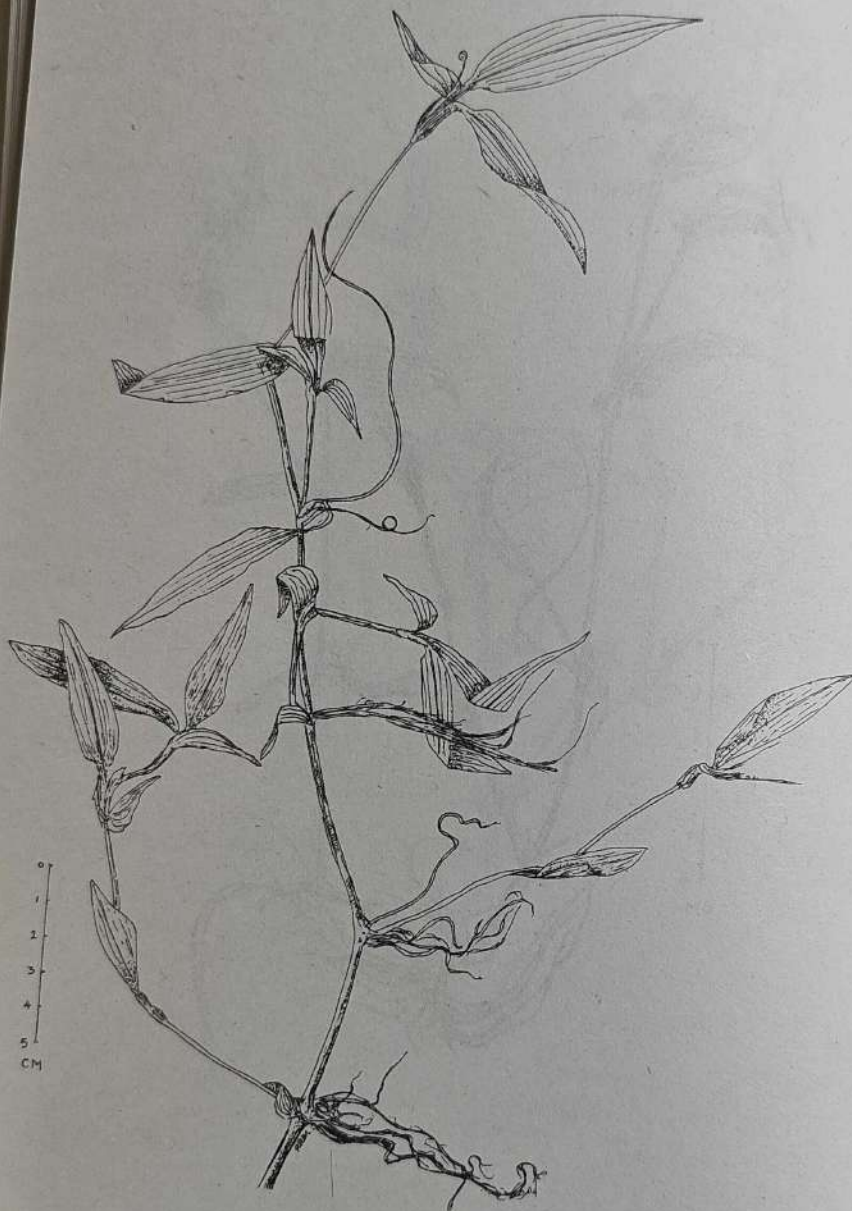
Herbs, decumbent, ascending, dichotomously branched, often rooting at nodes. Leaves 2.5–8.0 x 1.0–2.5 cm, ovate to broadly oblong-lanceolate. Spathes 1–3 together, ovate-lanceolate. Flowers blue. Capsules c 0.6 x 0.3 cm, quadrate, subtruncate, apiculate. Seeds cylindric, brown.



*Commelina hasskarlii* C.B.Cl.



*Commelina kotschy* Hassk.



*Commelina longifolia* Lam.

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*Fls. & Frts.* : June–March.

*Distrib.* : Common in all districts in marshes of pools, ponds and lakes.

*C. hirsuta* (Wight) C.B.Cl. in DC. Monogr. Phan. 3: 163. 1881; Hook. f. Fl. Brit. India 6: 371. 1892; Cooke, Fl. Pres. Bombay 3: 292. 1958 (Repr. ed.). *Heterocarpus hirsutus* Wight, Ic. t. 2067. 1853.

Herbs, low, hirsute; stems branched from base, 15–30 cm long. Leaves 5.0–8.7 x 0.6–1.2 cm, linear-lanceolate, obtuse, acute or acuminate, hirsute on both surfaces; sheaths 1.2–1.5 cm long, villous. Spathes 1.75–3.0 cm long, apex acuminate, base cordate, hirsute or villous. Capsules c 0.33 cm long, lateral valves linear, dorsal ellipsoid, subrugose. Seeds ellipsoid.

*Fls. & Frts.* : July–November.

*Illus.* : Wight, *op.cit.*; Fyson, Fl. Nilgiri Pulney Hill tops 3: t. 537. 1920 (Repr. ed. 1975); Kammathy in Nayar & Sastry, Red Data Book Ind. Pl. 1: 126, f. 1987.

*Distrib.* : Rare. Nasik.

*C. kotschy* Hassk. in Schweinf. Fl. Aethiop. 207. 1867; Rolla Rao in Blumea 14: 349. 1966. *C. heterosperma* Blatt. & Hallb. in J. Ind. Bot. Soc. 2: 54. 1922.

Herbs. Leaves ovate-oblong or lanceolate. Spathes 1.0–1.7 x 1.0–1.5 cm, cordate, sparsely hairy. Capsules c 0.7 cm long, constricted in the middle.

*Fls. & Frts.* : September–October.

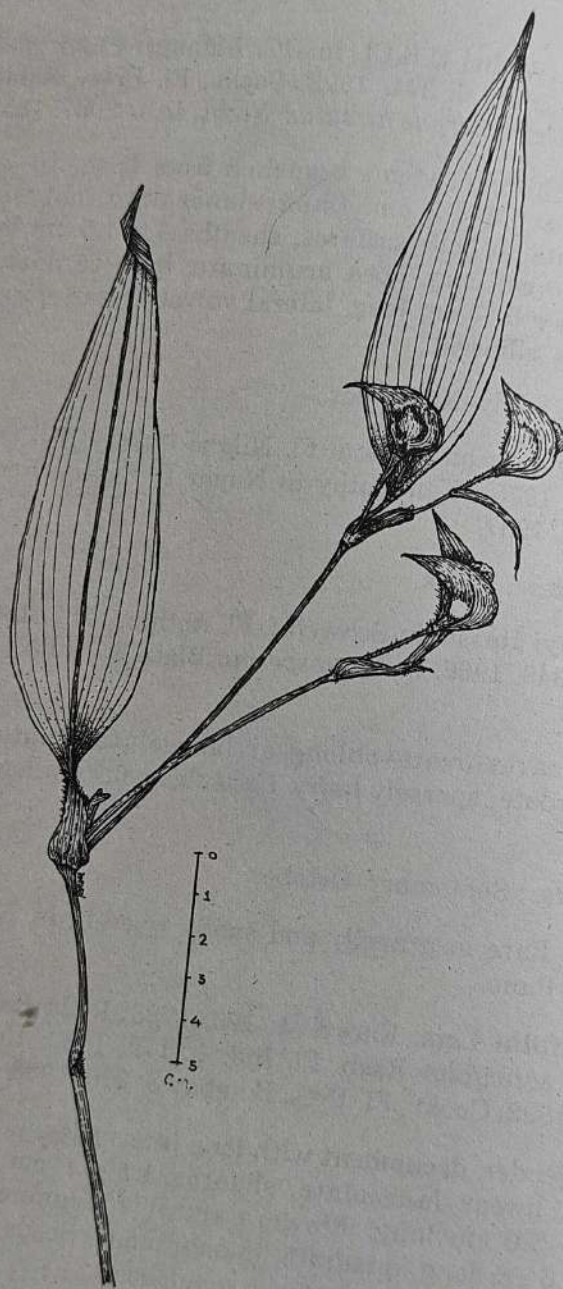
*Distrib.* : Rare in gravelly and sandy river-beds. Nasik (Blatt. & Hallb. *op.cit.*); Pune.

*C. longifolia* Lam. Encycl. 1: 129. 1783; Rolla Rao in Taxon 10: 254. 1961. *C. salicifolia* Roxb. Fl. Ind. 1: 172. 1832; Hook. f. Fl. Brit. India 6: 370. 1892; Cooke, Fl. Pres. Bombay 3: 290. 1958 (Repr. ed.).

Stems slender, decumbent with long internodes. Leaves 7.5–15.0 x 0.43–1.2 cm, linear-lanceolate; sheaths 1.5–2.5 cm long, ciliolate. Spathes 2.5–5.0 cm long. Flowers small, polygamous, dark blue. Capsules c 0.6 cm long, quadrate, membranous. Seeds c 0.33 cm long, black, powdered with white, ovate or subglobose.

*Fls. & Frts.* : October–December.

*Distrib.* : Konkan (Cooke, *op. cit.*); Pune (cultivated in gardens).



*Commelina paleata* Hassk.

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*C. maculata* Edgew. in Trans. Linn. Soc. 20: 89. 1846; Rolla Rao in Blumea 14: 353. 1966. *C. obliqua* Buch. - Ham. ex D. Don, Prodr. Fl. Nepal. 45. 1825 non Vahl, 1806; Hook. f. Fl. Brit. India 6: 372. 1892; Cooke, Fl. Pres. Bombay 3: 293. 1958 (Repr. ed.). *C. paludosa* Bl. Enum. Pl. Jav. 1: 2. 1827; Rolla Rao & Kammathy in J. Bombay nat. Hist. Soc. 59: 60, t. 1(B). 1962; Rolla Rao in Notes Roy. Bot. Gard. Edinb. 25: 181. 1964. *C. paludosa* var. *viscida* (C.B.Cl.) Rolla Rao & Kammathy in Bull. Bot. Surv. India 3: 168. (1961) 1962; Rolla Rao in Notes Roy. Bot. Gard. Edinb. 25: 181. 1966.

Herbs; stems c 1 m long, fleshy, suberect or procumbent, rooting at lower nodes. Leaves 5-8 x 1.5-3.5 cm, variable, ovate, ovate-lanceolate or elliptic-lanceolate, scaberulous; sheaths c 1 cm long, hairy at apex. Flowers blue in bifid racemes. Spathes c 1.5 cm long, funnel-shaped. Capsules subglobose, shortly beaked. Seeds c 0.4 cm long, ovoid, greenish-brown.

Fls. & Frts. : August-November.

Illus. : Wight, Ic. t. 2066. 1853 (*C. polyspatha*); Rolla Rao & Kammathy, *op. cit.*

Distrib. : Ahmednagar; Amaravati; Bombay; Chandrapur; Kolhapur; Nagpur; Nasik; Pune; Raigad; Satara; Sindhudurg; Thane.

*C. paleata* Hassk. in Miq. Pl. Jungh. 2: 139. 1852; Hook. f. Fl. Brit. India 6: 372. 1892; Cooke, Fl. Pres. Bombay 3: 294. 1958 (Repr. ed.); Rolla Rao & Kammathy in J. Bombay nat. Hist. Soc. 59: 61, t. 1(C). 1962.

Herbs; stems erect or prostrate, fleshy, rooting at nodes. Leaves 3.0-12.5 x 1-4 cm, ovate-lanceolate; sheaths 1-2 cm long. Spathes 1.5-2.0 cm long. Flowers blue. Capsules 3-valved, subglobose. Seeds c 0.4 cm long, ellipsoid, rounded at both ends, compressed.

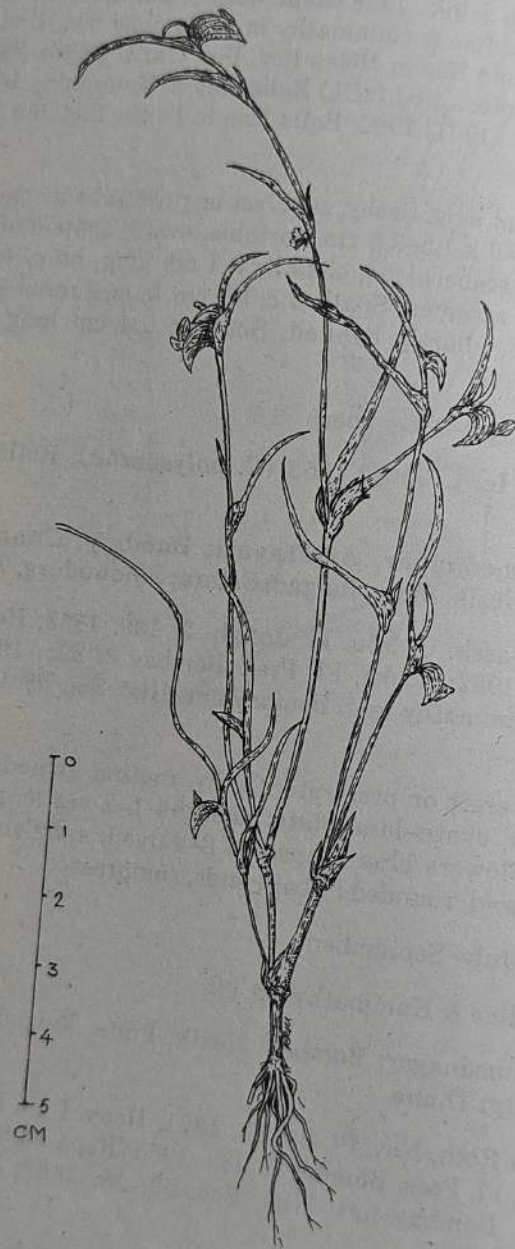
Fls. & Frts. : July-September.

Illus. : Rolla Rao & Kammathy, *op. cit.*

Distrib. : Ahmednagar; Bombay; Nasik; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

*C. subulata* Roth, Nov. Pl. Sp. 23. 1821; Hook. f. Fl. Brit. India 6: 369. 1892; Cooke, Fl. Pres. Bombay 3: 289. 1958 (Repr. ed.); Rolla Rao & Kammathy in J. Bombay nat. Hist. Soc. 59: 58. 1962; Rolla Rao in Blumea 14: 353. 1966.

Herbs, slender; stems erect, 20-40 cm high, simple or branched. Leaves 2.5-7.5 x 0.25-0.33 cm, linear; sheaths reaching 1.2 cm long.



*Commelina subulata* Roth

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Spathes 0.6–1.0 cm long, falcate, pubescent, green or striate with purple, base cordate. Flowers small, orange–purple violet when dry. Capsules small, ovoid, 3-valved. Seeds black, puberulous, slightly compressed, deeply transversely grooved.

Fls. & Frts. : July–October.

Distrib. : Weed of rice-fields and other marshes. Kolhapur; Pune.

Notes : Cooke (*op.cit.*) had included this on the authority of Woodrow but doubted whether it was indigenous to Bombay. Rolla Rao & Kammathy (*op.cit.*) found this species to occur in Maharashtra.

**C. suffruticosa** Bl. Enum. Pl. Jav. 1: 3. 1827; Hook. f. Fl. Brit. India 6: 374. 1892; Fernandez *et al.* in J. Bombay nat. Hist. Soc. 52: 662. 1954; Rolla Rao & Kammathy, *Ibid.* 59: 65, t. 1(E). 1962.

Herbs, 28–50 cm high; rootstock perennial. Leaves cauline, sessile or subsessile, 9–17 x 3.5–7.0 cm, lanceolate or elliptic, subacuminate, unequal sided, the lower leaves often smaller. Spathes pedunculate, 1.5–2.5 x 0.9–1.5 cm, broadly ovate–turbinate, apex acute; base truncate, rounded or subcordate, margins hirsute. Flowers white. Capsules c 0.5 x 0.5 cm, obcordate, laterally flattened. Seeds filling the loculus, the inner face of the seed flat, outer one convex.

Fls. & Frts. : July–October.

Illus. : Rolla Rao & Kammathy, *op. cit.*

Distrib. : Akola; Amaravati; Bombay; Chandrapur; Kolhapur; Nasik; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

#### DOUBTFUL AND INDETERMINABLE SPECIES :

**C. avenaeifolia** Grah. Cat. Bombay Pl. 224. 1839; Hook. f. Fl. Brit. India 6: 374. 1892; Cooke, Fl. Pres. Bombay 3: 294. 1958 (Repr. ed.).

Leaves and sheaths hairy. Involucre truncate.

Distrib. : In the dense part of the jungle at Khandala (Deccan), Graham.

Note : There are no data for the determination of this plant, of which the description is very meagre (Cooke, *op. cit.*).

#### CULTIVATED SPECIES :

**C. virginica** L. Sp. Pl. ed. 2: 61. 1762; Rolla Rao in Blumea 14: 354. 1966.

Flowers large, blue.

*Distrib.* : Cultivated in gardens. Pune.

*Note* : An American species.

CYANOTIS D. Don (*nom. cons.*)

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| 1. Valves of the capsules separating from a free central columnar 3-toothed axis                               | ... | <i>C. papilionacea</i> |
| 1. Capsules with no free central column after dehiscence :   | ... |                        |
| 2. Roots of fusiform narrow tubers :   | ... |                        |
| 3. Corolla-lobes obovate-suborbicular; filaments and styles spirally twisted                                   | ... | <i>C. concanensis</i>  |
| 3. Corolla-lobes ovate, subacute; filaments and styles not spirally twisted                                    | ... | <i>C. tuberosa</i>     |
| 2. Roots fibrous :   | ... |                        |
| 4. Floccosely silky or cobwebby woolly herbs :   | ... |                        |
| 5. Styles naked  | ... | <i>C. fasciculata</i>  |
| 5. Styles bearded  | ... | <i>C. obtusa</i>       |
| 4. Plants not as above :   | ... |                        |
| 6. Capsules nearly glabrous  | ... | <i>C. cristata</i>     |
| 6. Capsules hirsute at apex :  | ... |                        |
| 7. Seeds finely warty  | ... | <i>C. arcotensis</i>   |
| 7. Seeds obscurely or irregularly pitted :   | ... |                        |
| 8. Stems sparingly or scarcely branched, robust, glabrous; internodes short; leaves moderately thick, glabrous | ... | <i>C. cerifolia</i>    |
| 8. Stems branched, softly villous; internodes long; leaves sparsely hairy                                      | ... | <i>C. pilosa</i>       |

*Cyanotis arcotensis* Rolla Rao in Blumea 14: 345, f. 1. 1966.

Herbs, annual, hirsute; roots slender; stem 15–30 cm long, mostly erect or slightly decumbent, branched from the base. Leaves sessile, 3–10 x 0.4–1.0 cm, lanceolate to linear, apex acute, base pointed or rounded, hirsute, margins entire, finely hairy. Cymes mostly terminal, single or in branches of two or three. Flowers pinkish, in scorpioid cymes, concealed within the bracteoles. Capsules c 0.3 x 0.2 cm, 3-celled, each cell with 2 seeds. Seeds c 0.2 cm long, dark brown.

*Fls. & Frts.* : October.

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*Illus.* : Rolla Rao, *op. cit.*

*Distrib.* : Pune.

**C. cerifolia** Rolla Rao & Kammathy in J. Linn. Soc. Bot. 59 (379) : 306, f. 1-6. 1966.

Herbs, perennial, stout; stems 0.5-2.0 m high, spreading, rooting at nodes. Leaves sessile, 3-8 x 1-3 cm, oblong to lanceolate or ovate-lanceolate, apex acute or slightly obtuse, base broad, semi-amplexicaul, margins finely hairy. Inflorescence of scorpioid cymes, much condensed, axillary and terminal. Flowers c 1.5 cm long, bluish-pink. Capsules c 0.3 cm long, 3-celled, each with 2 seeds. Seeds c 0.15 cm long.

*Fls. & Frts.* : August-November.

*Illus.* : Rolla Rao & Kammathy, *op. cit.*

*Distrib.* : Pune (Rolla Rao & Kammathy, *op. cit.*).

**C. concanensis** Hassk. Commel. Ind. 114. 1870; Rolla Rao in Blumea 14: 348. 1966. *C. sahyadrica* Blatt. in J. Bombay nat. Hist. Soc. 33: 77, f. 2 (3-7). 1929; Rolla Rao in Notes Roy. Bot. Gard. Edinb. 25: 189. 1965.

Herbs, c 30 cm high, suberect; true stem rooting without radical leaves; pseudostem formed by sheath of c 4 radical leaves. Radical leaves c 20 x 3 cm, linear-lanceolate, densely hairy beneath; cauline leaves few, 5-11 x 1.0-1.5 cm, ensiform, upper surface with sparse long hairs, lower surface densely hairy. Spathes in scorpioid cymes, purplish or reddish-purple. Flowers blue. Capsules c 0.5 x 0.4 cm, ellipsoid. Seeds 6, 0.1-0.2 cm long, broadly ovoid, slightly narrower, somewhat compressed, truncate at base, flattened on one side, rounded at apex, rugose.

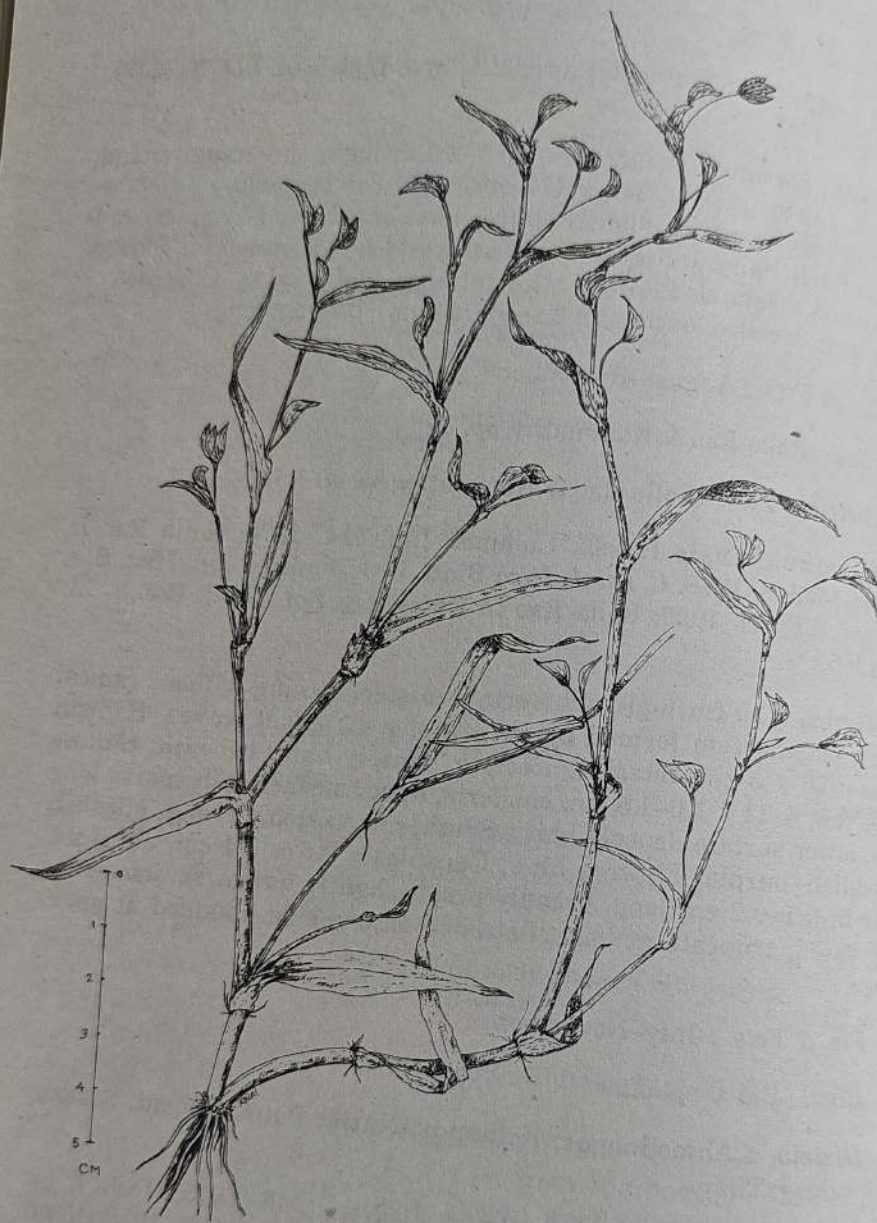
*Fls. & Frts.* : July-November.

*Illus.* : Blatt. *op. cit.*

*Distrib.* : Ahmednagar; Kolhapur; Nasik; Pune; Raigad; Satara; Sindhudurg; Thane.

**C. cristata** (L.) D. Don, Prodr. Fl. Nepal. 46. 1825; Hook. f. Fl. Brit. India 6: 385. 1892; Cooke, Fl. Pres. Bombay 3: 304. 1958 (Repr. ed.). *Tradescantia cristata* L. Sp. Pl. 42. 1753.

Herbs, annuals, diffuse or suberect, rooting at nodes. Leaves 2.0-7.5 x 0.5-1.5 cm, oblong, ovate-oblong, elliptic-oblong or ovate-lanceolate, apex obtuse or subacute, flat, glabrous or sparsely hairy,



*Cyanotis fasciculata* (Heyne ex Roth)  
J.A. & J.H. Schult. var. *glabrescens* C.B.Cl.

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with villous ciliate margins, base rounded or cordate. Flowers purple, in recurved scorpioid cymes, 1.2–2.5 cm long. Capsules c 0.2 cm long, subglobose, trigonous.

*Fls. & Frts.* : June–November.

*Illus.* : Wight, Ic. t. 2082. 1853.

*Distrib.* : In marshy places. Common in all districts.

**C. fasciculata** (Heyne ex Roth) J.A. & J.H. Schult. in R. & S. Syst. Nat. 7: 1152. 1830; Hook. f. Fl. Brit. India 6: 387. 1892; Cooke, Fl. Pres. Bombay 3: 303. 1958 (Repr. ed.). *Tradescantia fasciculata* Heyne ex Roth, Nov. Pl. Sp. 189. 1821.

1. Leaves and bracts white woolly; filaments bearded

1. Leaves, bracts and filaments glabrous

... var. *fasciculata*

... var. *glabrescens*

var. *fasciculata*.

Herbs, c 15 cm high, branched. Leaves sessile, 2.2–7.5 x 0.2–1.8 cm, lanceolate to ovate-lanceolate, fleshy. Inflorescence of compact, axillary and terminal cymes. Flowers blue or bluish-purple. Capsules c 0.2 cm long, oblong, pilose at apex. Seeds 6, oblong, faintly rugose.

*Fls. & Frts.* : August–November.

*Illus.* : Wight, Ic. t. 2086. 1853.

*Distrib.* : Common in all districts.

var. *glabrescens* C. B. Cl. in DC. Monogr. Phan. 3: 253. 1881; Hook. f. Fl. Brit. India 6: 388. 1892; Cooke, Fl. Pres. Bombay 3: 304. 1958 (Repr. ed.).

Herbs, 5–15 cm high. Leaves 2.0–2.6 x 0.3–0.5 cm, linear, minutely reticulate on both sides. Inflorescence of axillary and terminal cymes. Flowers purple. Capsules c 0.3 x 0.1 cm, ellipsoid, hairy on upper half. Seeds 6, oblong-subpyramidal, black.

*Fls. & Frts.* : August–October.

*Distrib.* : Ahmednagar; Kolhapur; Nasik; Pune; Satara.

**C. obtusa** Trim. Handb. Fl. Ceylon 4: 312, t. 94. 1898; Rolla Rao in Blumea 14: 349. 1966. *C. arachnoidea* sensu Hook. f. Fl. Brit. India 6: 386. 1892 *p.p.* non C.B.Cl. 1881.

Herbs, suberect. Leaves linear-oblong or lanceolate, apex obtuse. Cymes subsessile, terminal and axillary. Capsules oblong. Seeds elongate, conical, obscurely pitted.

*Distrib.* : Deccan Peninsula (Hook. f. *op. cit.*).

**C. papilionacea** (L.) R. & S. Syst. Veg 7: 1151. 1830; Hook. f. Fl. Brit. India 6: 384. 1892; Cooke, Fl. Pres. Bombay 3: 302. 1958 (Repr. ed.). *Tradescantia papilionacea* L. Mant. 573. 1771.

1. Plants hirsute with spreading hairs; bracteoles subreniformly falcate; seeds smooth or obscurely pitted

1. Plants softly hairy; bracteoles ovate-falcate; seeds rugose

... var. *papilionacea*

... var. *vaginata*

var. **papilionacea.**

Annuals, 10–20 cm high, hispid, sparingly branched from near base, branches decumbent, often rooting; stems red, patently pilose. Leaves sessile, 2.5–5.0 x 0.6–1.2 cm, linear-oblong or lanceolate, apex acute, acuminate or obtuse and apiculate, more or less hairy above, patently hairy beneath. Corolla-tube whitish, lobes bluish-purple. Capsules c 2.0 x 1.5 cm, oblong, included, hairy towards the apex. Seeds smooth or pitted, 2 in each cell.

*Fls. & Frts.* : August–September.

*Distrib.* : Konkan (Cooke, *op. cit.*).

var. **vaginata** (Wight) C.E.C. Fischer in Gamble, Fl. Pres. Madras 1549. 1931 [3: 1081. 1957 (Repr. ed.)]. *C. vaginata* Wight, Ic. t. 2088. 1853; Hook. f. Fl. Brit. India 6: 385. 1892; S.M. Almeida, Fl. Savantwadi 2: 46. 1990.

Erect or ascending herbs, softly hairy. Leaves oblong-lanceolate, villous on both sides, acute or obtuse at apex; sheaths c 1 cm long. Inflorescence axillary with 1–2 cymes. Spathe as long as inflorescence. Capsules oblong. Seeds cup-shaped, brown, rugose.

*Fls. & Frts.* : August–October.

*Illus.* : Wight, *op. cit.*

*Distrib.* : Rare in wet places near water-course. Sindhudurg (S.M. Almeida, *op. cit.*).

**C. pilosa** Schult. f. in R. & S. Syst. Veg. 7: 1155. 1830; Hook. f. Fl. Brit. India 6: 387. 1892. *C. wightii* C.B.Cl. in DC. Monogr. Phan. 3: 250. 1881; Hook. f. *op. cit.* 386; Cooke, Fl. Pres. Bombay 3: 304. 1958 (Repr. ed.).

Stems :  
linear, oblong  
tip; sheaths  
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ellipsoid or  
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Stems 30-90 cm high, erect or ascending. Leaves 5-45 x 0.7-3.7 cm, linear, oblong-lanceolate or narrowly lanceolate, narrowed from base to tip; sheaths loose, 1.2-3.0 cm long, villous. Cymes axillary and terminal, subcorymbose. Flowers bluish-purple. Capsules 0.3-2.5 cm long, ellipsoid or obovoid. Seeds brown, truncate at base, slightly tapering upwards with a shortly conical apex.

*Fls. & Frts.* : August-September.

*Illus.* : *C. longifolia* Wight, Ic. t. 2084. 1853 non Bth. 1844.

*Distrib.* : Rare in wet grounds. Satara (Cooke, *op. cit.*).

***C. tuberosa*** (Roxb.) J.A. & J.H. Schult. in R. & S. Syst. Veg. 7: 1153. 1830; Hook. f. Fl. Brit. India 6: 386. 1892; Cooke, Fl. Pres. Bombay 3: 302. 1958 (Repr. ed.). *Tradescantia tuberosa* Roxb. Pl. Cor. 2: t. 108. 1799 Fl. Ind. 2: 19. 1832.

1. Plants densely villous

1. Plants more or less glabrous

... var. *tuberosa*

... var. *adscendens*

**var. *tuberosa*.**

Herbs; stems 15-90 cm long, swollen and very hirsute at base, suberect or prostrate and creeping below. Leaves sessile, radical and lower cauline 15-25 x 0.75-2.5 cm, linear or ensiform, upper cauline leaves much shorter. Flowers purplish-blue, in solitary or clustered cymes. Capsules c 0.4 x 0.3 cm, ellipsoid, upper half hairy. Seeds c 0.15 x 0.15 cm, truncate at base, shortly conic at apex, obscurely rugose, brown.

*Fls. & Frts.* : June-October.

*Distrib.* : In grasslands. Ahmednagar; Beed; Kolhapur; Osmanabad; Pune; Raigad; Ratnagiri; Satara; Thane.

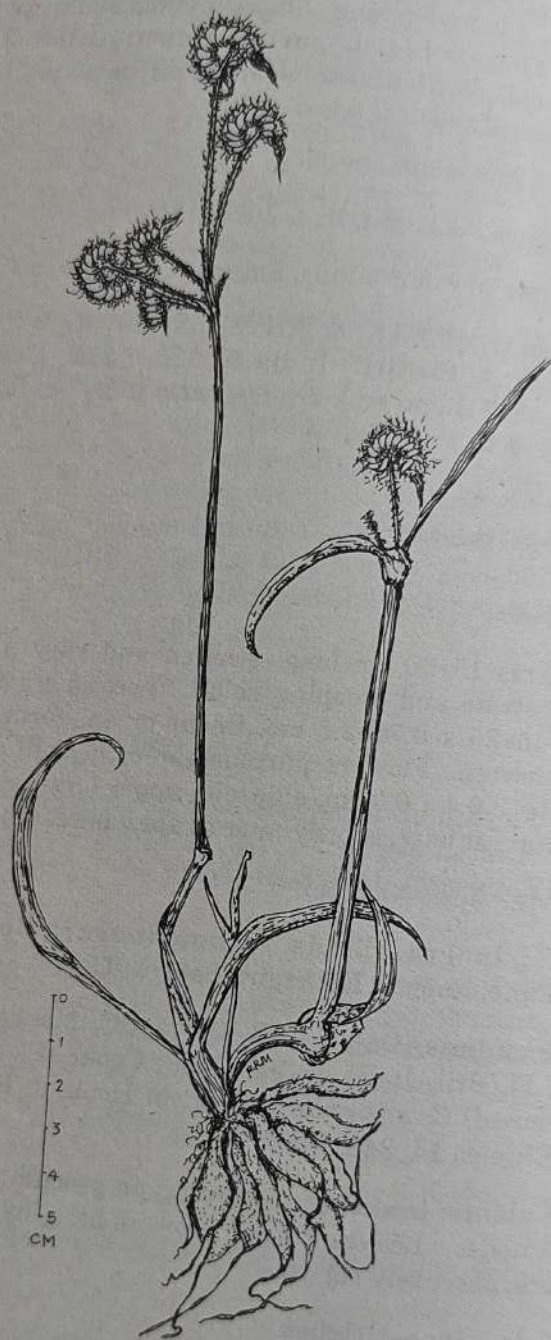
**var. *adscendens*** (Dalz.) C. B. Cl. in DC. Monogr. Phan. 3: 249. 1881; Hook. f. Fl. Brit. India 6: 386. 1892; Cooke, Fl. Pres. Bombay 3: 303. 1958 (Repr. ed) *C. adscendens* Dalz. in Hook. J. Bot. 4: 343. 1852; Rolla Rao in Blumea 14: 348. 1966.

Smaller plants; branches ascending or procumbent, rooting and proliferous at nodes. Leaves linear. Flowers blue, in cymes. Capsules broad, truncate, obscurely rugose.

*Fls. & Frts.* : June-October.

*Illus.* : Wight, Ic. t. 2087. 1853 (*C. sarmentosus*).

*Distrib.* : Kolhapur; Konkan (Cooke, *op. cit.*); Osmanabad; Pune.



*Cyanotis tuberosa* (Roxb.) J.A. & J.H. Schult.  
var. *tuberosa*.

**Floscopa scandens** Lour. Fl. Cochinch. 193. 1790; Hook. f. Fl. Brit. India 6: 390. 1892; Cooke, Fl. Pres. Bombay 3: 306. 1958 (Repr.ed.).

Herbs, c 5 cm high, erect or subscandent; stems rooting at basal nodes. Leaves alternate, 3.5–6.0 x 0.8–2.0 cm, elliptic-lanceolate, apex acuminate; sheaths 0.7–1.0 cm long. Flowers purple, in clustered panicles. Capsules suborbicular, c 0.3 cm across, 2-seeded. Seeds ellipsoid, c 0.2 cm long, rugose.

Fls. & Frts. : September–October.

Illus. : *Dithyrocarpus undulatus* Wight, Ic.t. 2079 & 2080. 1853.

Distrib. : In marshes. Satara; Sindhudurg.

MURDANNIA Royle (nom. cons.)

1. Cells of ovary 1-ovuled
1. Cells of ovary 2-many-ovuled : ... *M. vaginata*
2. Seeds 2-seriate in each cell :
  3. Flowers axillary, solitary or clustered :
    4. Stems reaching 40 cm long; leaves more than 2.5 cm long; filaments bearded ... *M. lanuginosa*
    4. Stems not exceeding 20 cm long; leaves less than 2.5 cm long; filaments naked ... *M. crocea*  
ssp. *ochracea*
  3. Flowers panicled :
    5. Filaments all bearded; seeds minutely tessellate ... *M. lanceolata*
    5. Filaments all naked; seeds nearly smooth ... *M. semiteres*
2. Seeds 1-seriate in each cell :
  6. Cells of ovary 2-ovuled, of capsule 2-seeded :
    7. Leaves 5. 0–12.5 cm long; roots fibrous :
      8. Leaves 0.6–1.2 cm broad; capsules 0.425 cm long; seeds rugose and pitted ... *M. nudiflora*
      8. Leaves 1.75 cm broad; capsules larger; seeds less rugose or almost smooth ... *M. loriformis*
    7. Leaves reaching 30 cm or more in length; roots tuberous or fibrous:
      9. Roots tuberous; fertile stamens 2 with 3 staminodes and 1 rudimentary antherless stamen; filaments of the 3 staminodes naked... *M. simplex*

9. Roots fibrous; fertile stamens 3; staminodes 3; rudimentary stamen absent; filaments of all stamens and staminodes equal and bearded
6. Cells of ovary 3—many ovuled, of capsule 1–3 or more seeded : ... *M. gigantea*
10. Stems not leafy ...
10. Stems leafy : ... *M. edulis*
11. Flowers in axillary, 1–3—flowered cymes :
12. Flowers blue; all filaments naked ...
12. Flowers ochre-yellow; all filaments bearded ... *M. wightii*
11. Flowers in panicles : ... *M. versicolor*
13. Root of slender tubers; leaves reaching 25 cm long; all filaments bearded ...
13. Root fibrous; leaves less than 7.5 cm long; filaments of fertile stamens bearded, of the sterile usually naked : ... *M. japonica*
14. A procumbent herb; stem less than 30 cm long; filaments of sterile stamens sometimes bearded ...
14. An erect herb, 30 cm high; filaments of sterile stamens never bearded ... *M. spirata*
- ... *M. dimorpha*

**Murdannia crocea** (Griff.) Faden ssp. **ochracea** (Hassk.) Faden in Kew Bull. 32: 188. 1977. *Dichaespermum ochraceum* Hassk. Commel. Ind. 41. 1870. *Murdannia ochracea* Brueck. in Engl. & Prantl, Pflanzenfam. 2, 15a: 173. 1930; Sant. in J. Bombay nat. Hist. Soc. 52: 658. 1954. *Aneilema ochraceum* (Hassk.) Dalz. in Hook. J. Bot. 3: 135. 1851; Hook. f. Fl. Brit. India 6: 380. 1892; Cooke, Fl. Pres. Bombay 3: 299. 1958 (Repr. ed.).

Herbs, rooting at lower nodes, erect, leafy. Leaves sessile, 1.0–1.5 cm broad, flat, oblong or ovate-oblong, apex acute or subobtuse, base cordate, subamplexicaul. Flowers light brown, fading blue. Capsules c 0.5 cm long, oblong, apiculate. Seeds angular, rugose, straw coloured.

*Fls. & Frts.* : October.

*Illus.* : *Dichaespermum repens* Wight, Ic. t. 2078, f. 3. 1853 non Hassk. 1881.

*Distrib.* : Raigad; Ratnagiri; Satara.

**M. dimorpha** (Dalz.) Brueck. in Engl. & Prantl, Pflanzenfam. ed. 2, 15a: 173. 1930; Sant. in J. Bombay nat. Hist. Soc. 52: 658. 1954. *Aneilema dimorphum* Dalz. in Hook. J. Bot. 3: 138. 1851; Hook. f. Fl. Brit. India 6: 377. 1892; Cooke, Fl. Pres. Bombay 3: 297. 1958 (Repr. ed.).

Annuals. Leaves 3-6 x 0.5-1.5 cm, linear-oblong, folded and curved backwards; sheaths short, ciliate. Flowers 0.6-0.8 cm across, purple; bracts small, ovate, cucullate. Capsules c 0.5 cm long, oblong, mucronate. Seeds subcubical, obscurely rugose.

Fls. & Frts. : August-September.

Illus. : *Aneilema paniculata* Wight, Ic. t. 2075. 1853.

Distrib. : Bhandara; Pune; Raigad; Ratnagiri; Satara; Sindhudurg.

**M. edulis** (Stokes) Faden in Taxon 29: 77. 1980. *Commelina edulis* Stokes, Bot. Materia Med. 1: 184. 1812. *Murdannia loureirii* (Hance) Rolla Rao & Kammathy in Notes Roy. Bot. Gard. Edinb. 25: 184. 1964. *M. scapiflora* (Roxb.) Royle, Ill. Bot. Himal. 403, t. 95. 1839; Sant. in J. Bombay nat. Hist. Soc. 52: 658. 1954. *Aneilema scapiflorum* (Roxb.) Kostel, Allg. Med. Pharm. Fl. 1: 127. 1831; Hook. f. Fl. Brit. India 6: 375. 1892; Cooke, Fl. Pres. Bombay 3: 295. 1958 (Repr. ed.).

Herbs, perennial, tufted; roots of elongate fusiform tubers. Leaves radical, erect, 10-20 x 1.0-1.5 cm, narrowly ensiform, apex finely acuminate, base slightly narrowed. Flowers blue, in erect elongate panicles. Capsules c 0.5 cm long, obovoid. Seeds superposed, sharply 3-gonous.

Fls. & Frts. : May-June.

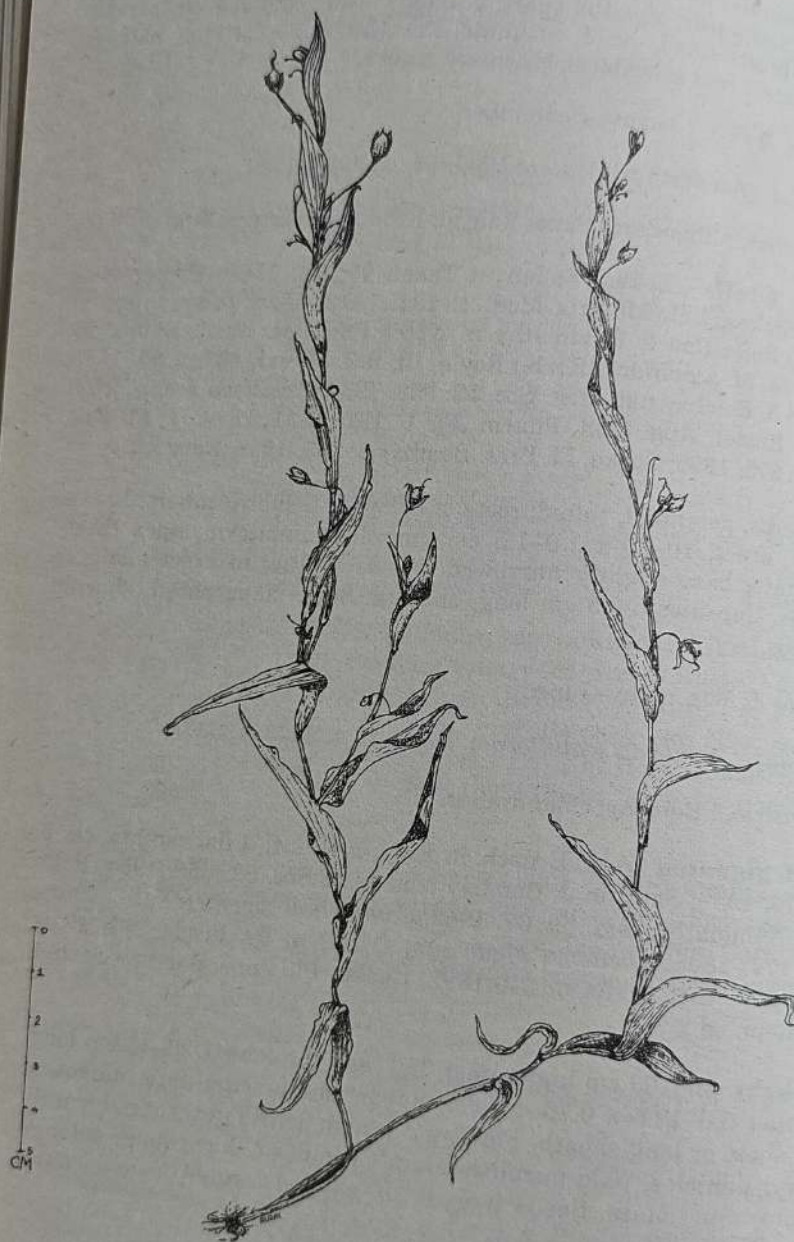
Illus. : *Aneilema scapiflorum* Wight, Ic. t. 2073. 1853.

Distrib. : Bombay; Chandrapur.

**M. gigantea** (Vahl) Brueck. in Engl. & Prantl, Pflanzenfam. ed. 2, 15a: 173. 1930; Sant. in J. Bombay Nat. Hist. Soc. 52: 658. 1954; Rolla Rao & Kammathy, *Ibid.* 59: 67. 1962. *Commelina gigantea* Vahl, Enum. Pl. 2: 177. 1806. *Aneilema giganteum* (Vahl) R. Br. Prodr. 271. 1810; Hook. f. Fl. Brit. India 6: 379. 1892; Cooke, Pl. Pres. Bombay 3: 299. 1958 (Repr. ed.).

Herbs, 30-100 cm high, erect. Leaves : the lowest 25-45 cm long, the upper 5.0-12.5 x 0.75-1.2 cm, linear, finely acuminate, narrowed into a short or long sheath. Flowers c 1.2 cm across in terminal (rarely axillary) panicles, pale purplish-blue. Capsules c 1 cm long, oblong-ellipsoid, mucronate. Seeds irregularly shaped, rough or echinulate, brown.

Fls. & Frts. : August-December.



*Murdannia lanuginosa* (Wall. ex C.B.Cl.) Brueck.

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*Illus.* : *Aneilema ensifolium* Wight, Ic. t. 2074. 1853.

*Distrib.* : Bhandara; Kolhapur; Ratnagiri; Satara.

**M. japonica** (Thunb.) Faden in Taxon 26: 142. 1977. *Commelina japonica* Thunb. in Trans. Linn. Soc. London 2: 332. 1794. *Aneilema lanceolatum* Kunth, Enum. Pl. 4: 69. 1843; Hook. f. Fl. Brit. India 6: 376. 1892. *A. herbaceum* Wall. Cat. 5223. 1828; Cooke, Fl. Pres. Bombay 3: 296. 1958 (Repr. ed.). *Murdannia elata* (Vahl) Brueck. in Engl. & Prantl, Pflanzenfam. ed. 2, 15a: 173. 1930.

Herbs, c 1.5 cm tall; tubers spindle-shaped. Leaves 3-4 cm across, broadly ovate or ovate-lanceolate, apex acute, margins white, hyaline, undulate. Flowers pale blue to white, 0.8-1.0 cm across. Capsules 0.4-0.6 cm across, subglobose. Seeds yellowish-grey, angled.

*Fls. & Frts.* : August-October.

*Illus.* : Wight, Ic. t. 2072. 1853.

*Distrib.* : Infrequent in moist situations in the undergrowth of deciduous forests. Sindhudurg.

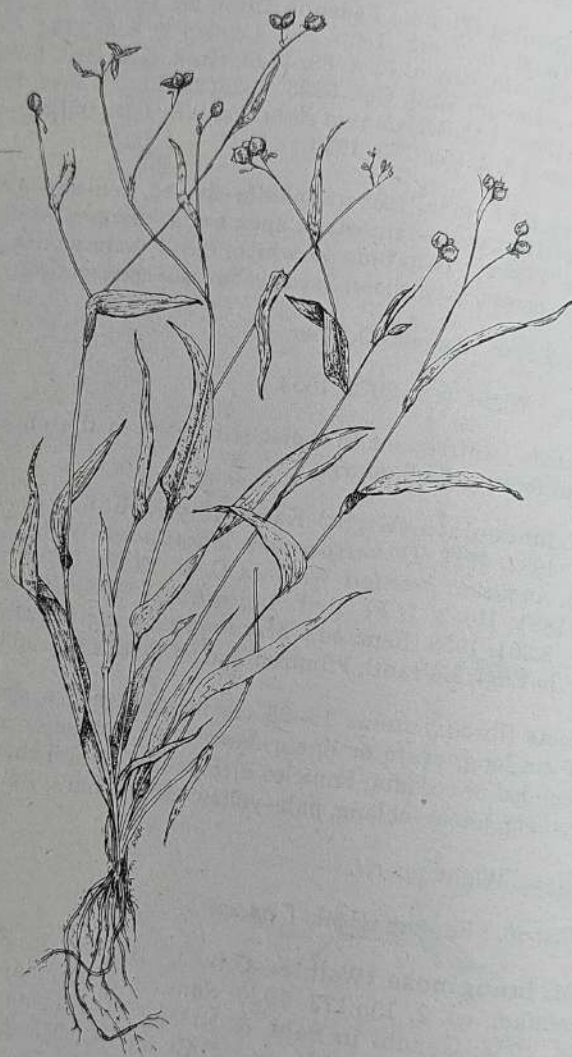
**M. lanceolata** (Wight) Kammathy in Bull. Bot. Surv. India 24:206. (1982) 1983. *Dichaespermum lanceolatum* Wight, Ic. t. 2078, f. 1. 1853. *Aneilema koenigii* Wall. ex C. B. Cl. in DC. Monogr. Phan. 3:215. 1881; Hook. f. Fl. Brit. India 6:381. 1892; Cooke, Fl. Pres. Bombay 3:301. 1958 (Repr. ed.). *Murdannia koenigii* (Wall. ex C. B. Cl.) Brueck. in Engl. & Prantl, Pflanzenfam. ed. 2, 15a:173. 1930.

Roots fibrous; stems 15-25 cm long, branches slender. Leaves 2.5-5.0 cm long, ovate or linear-lanceolate, obtuse or acute at apex, base rounded or cordate. Panicles dichotomously branched. Capsules c 0.43 cm long, linear-oblong, pale-yellow. Seeds small, yellow.

*Illus.* : Wight, *op. cit.*

*Distrib.* : Konkan (Hook. f. *op. cit.*).

**M. lanuginosa** (Wall. ex C.B.Cl.) Brueck. in Engl. & Prantl, Pflanzenfam. ed. 2, 15a:173. 1930; Sant. in J. Bombay nat. Hist. Soc. 52:658. 1954; Gandhi in Sald. & Nicols. Fl. Hassan Dt. 648. 1976. *Aneilema lanuginosum* Wall. ex C.B.Cl. in DC. Monogr. Phan. 3:214. 1881; Hook f. Fl. Brit. India 6:380. 1892; Cooke, Fl. Pres. Bombay 3:300. 1958 (Repr. ed. ). *A. siennea* Blatt. in J. Bombay nat. Hist. Soc. 33:75. 1929. *Murdannia siennea* (Blatt.) Raiz. in Indian Forester 84:499. 1958.



*Murdannia nudiflora* (L.) Brenan

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Stems erect, pubescent, or villous, or nearly glabrous, stout, branched; roots of thickened fibres, almost tuberous. Leaves sessile, 3.7-6.2 x 0.6-1.0 cm, linear or linear-lanceolate with a broad base, finely acuminate, pubescent on both sides, margins undulate. Flowers blue. Capsules 0.5-0.7 cm long, oblong, trigonous, long-cuspidate with style. Seeds angular, smooth.

*Fls. & Frts.* : May-October.

*Distrib.* : Kolhapur; Satara; Sindhudurg.

**M. loriformis** (Hassk.) Rolla Rao & Kammathy in Bull. Bot. Surv. India 3: 393. 1961; Rolla Rao in Notes Roy. Bot. Gard. Edinb. 25: 184. 1964. *Aneilema loriforme* Hassk. in Miq. Pl. Jungh. 143. 1852. *A. nudiflorum* var. *terminalis* (Wight) C.B.Cl. Commel. Cyrt. Beng. 211. 1874; Hook. f. Fl. Brit. India 6: 379. 1892. *Murdannia malabarica* (L.) Brueck. var. *terminalis* (Wight) Sant. & Jain in Indian Forester 92: 643. 1966.

Herbs, suberect or spreading; stems stout. Leaves basal, forming rosettes. Flowers pale purple or blue, in elongate, 10-15-flowered cymes. Capsules larger, loculicidal, subglobose.

*Fls. & Frts.* : August-October.

*Illus.* : *Aneilema terminale* Wight, Ic. t. 2076. 1853.

*Distrib.* : Undergrowth in forests and grasslands. Kolhapur.

**M. nudiflora** (L.) Brenan in Kew Bull. 1952:189. 1952; Sant. in J. Bombay nat. Hist. Soc. 52:658. 1954. *Commelina nudiflora* L. Mant. 177.1767 (*non* Sp. Pl. 41.1753). *Aneilema nudiflorum* (L.) R. Br. Prodr. 271. 1810; Hook. f. Fl. Brit. India 6:378. 1892; Cooke, Fl. Pres. Bombay 3:298. 1958 (Repr. ed.). *A. nudiflorum* var. *compressa* (Dalz.) C.B.Cl. in DC. Monogr. Phan. 3:211.1881; Hook. f. *op. cit.* 379; Cooke, *op. cit.*

Herbs, annual, 18-30 cm high, erect or suberect. Leaves linear-oblong or lanceolate, apex acuminate or acute, flat, base rounded, cordate, or narrowed into a sheath. Flowers bluish-purple, pink or blue, in terminal (rarely axillary) panicles. Capsules c 0.4 x 0.2 cm, trigonously subglobose, mucronate. Seeds c 0.15 cm long, truncate at one end, rounded at other, angular on inner, rounded on other face, dark brown.

*Fls. & Frts.* : July- November.

*Illus.* : Lakshminarasimhan & Sharma, Fl. Nasik Dt. 485, f. 39. 1991.

*Distrib.* : Common in moist places and marshy areas. Akola; Amaravati; Bombay; Chandrapur; Kolhapur; Nagpur; Nasik; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane; Yavatmal.

**M. semiteres** (Dalz.) Sant. in Poona Agric. Coll. Mag. 41:284. 1951 & in J. Bombay nat. Hist. Soc. 52:658. 1954. *Aneilema semiteres* Dalz. in Hook. Kew J. Bot. 3: 138. 1851. *A. paniculatum* Wall. ex C. B.Cl. in DC. Monogr. Phan. 3:215. 1881 non Wight, 1853; Hook. f. Fl. Brit. India 6: 381. 1892; Cooke, Fl. Pres. Bombay 3: 300. 1958 (Repr.ed.).

Herbs, 4–20 cm high, erect, caespitose; roots fibrous; stems with yellowish, scarious sheaths at base. Leaves 4–10 x 0.13–0.15 cm, linear, finely acuminate. Flowers blue. Capsules 0.25–0.33 cm long, ellipsoid or subglobose, smooth, shining. Seeds pale yellow, irregularly angular.

*Fls. & Frts.* : July–October.

*Illus.* : *Dichaespermum juncoides* Wight, Ic. t. 2070. 1853.

*Distrib.* : Along road-sides and moist places. Ahmednagar; Akola; Amaravati; Aurangabad; Bombay; Kolhapur; Nasik; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

**M. simplex** (Vahl) Brenan in Kew Bull. 1952:186. 1952; Rolla Rao & Kammathy in J. Bombay nat. Hist. Soc. 59:66. 1962; Rolla Rao in Notes Roy. Bot. Gard. Edinb. 25: 189. 1965. *Commelina simplex* Vahl, Enum. Pl. 2: 177. 1806. *Aneilema sinicum* Ker.-Gawl. in Edw. Bot. Reg. t. 659. 1822; Hook. f. Fl. Brit. India 6: 379. 1892; Cooke, Fl. Pres. Bombay 3:299. 1958 (Repr. ed.); Sant. in J. Bombay nat. Hist. Soc. 52: 658. 1954. *A. rigidum* Blatt. in J. Bombay nat. Hist. Soc. 33: 73. 1929.

Herbs, 20–45 cm tall, perennial, erect or procumbent-ascending. Leaves 1.2–1.75 cm broad, linear, acute, cauline and tufted at base of stem; sheaths long, ciliate. Flowers bluish-violet, 2.0–2.5 cm across, in lax, terminal panicles on lateral peduncles. Capsules 0.5–0.7 cm across, subglobose, trigonous. Seeds c 0.2 cm long, obscurely rugose.

*Fls. & Frts.* : May–October.

*Illus.* : Wight, Ic. t. 2075. 1853 (*Aneilema secundum*); Brenan in Hepper, Fl. W. Trop. Afr. 3(1). 25, f. 327. 1968.

*Distrib.* : Kolhapur; Nasik; Pune; Ratnagiri; Satara; Sindhudurg.

**M. spirata** (L.) Brueck. in Engl. & Prantl, Pflanzenfam. ed. 2, 15a: 173. 1930; Sant. in J. Bombay nat. Hist. Soc. 52: 658. 1954. *Commelina spirata* L. Mant. 176. 1767. *Aneilema spiratum* (L.) R.Br. Prodr. 271. 1810; Hook. f. Fl. Brit. India 6: 377. 1892; Cooke, Fl. Pres. Bombay 3: 296. 1958 (Repr. ed.).

Herbs, erect or spreading, often rooting at lower nodes. Leaves sessile, 0.5–1.0 cm broad, lower broadly linear-lanceolate, upper oblong. Panicles dichotomously branched, few-flowered. Flowers c 0.75 cm across, bluish-purple or pale white. Capsules c 0.4 x 0.2 cm, subglobose or ovoid-oblong, mucronate, trigonous. Seeds subconical-cylindric, white or straw coloured.

*Fls. & Frts.* : July–February.

*Illus.* : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 752. 1982; Ugemuge, Fl. Nagpur Dt. t. 162. 1982.

*Distrib.* : Common in moist soils. Ahmednagar; Amaravati; Bhandara; Bombay; Chandrapur; Kolhapur; Nagpur; Nasik; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

**M. vaginata** (L.) Brueck. in Engl. & Prantl, Pflanzenfam. ed. 2, 15a: 173. 1930; Sant. in J. Bombay nat. Hist. Soc. 52: 658. 1954; Panigr. & Kammathy in Proc. nat. Acad. Sci. Ind. 33: 499. 1963. *Commelina vaginata* L. Mant. 177. 1767. *Aneilema vaginatum* (L.) R. Br. Prodr. 271. 1810; Hook. f. Fl. Brit. India 6: 381. 1892; Cooke, Fl. Pres. Bombay 3: 300. 1958 (Repr. ed.).

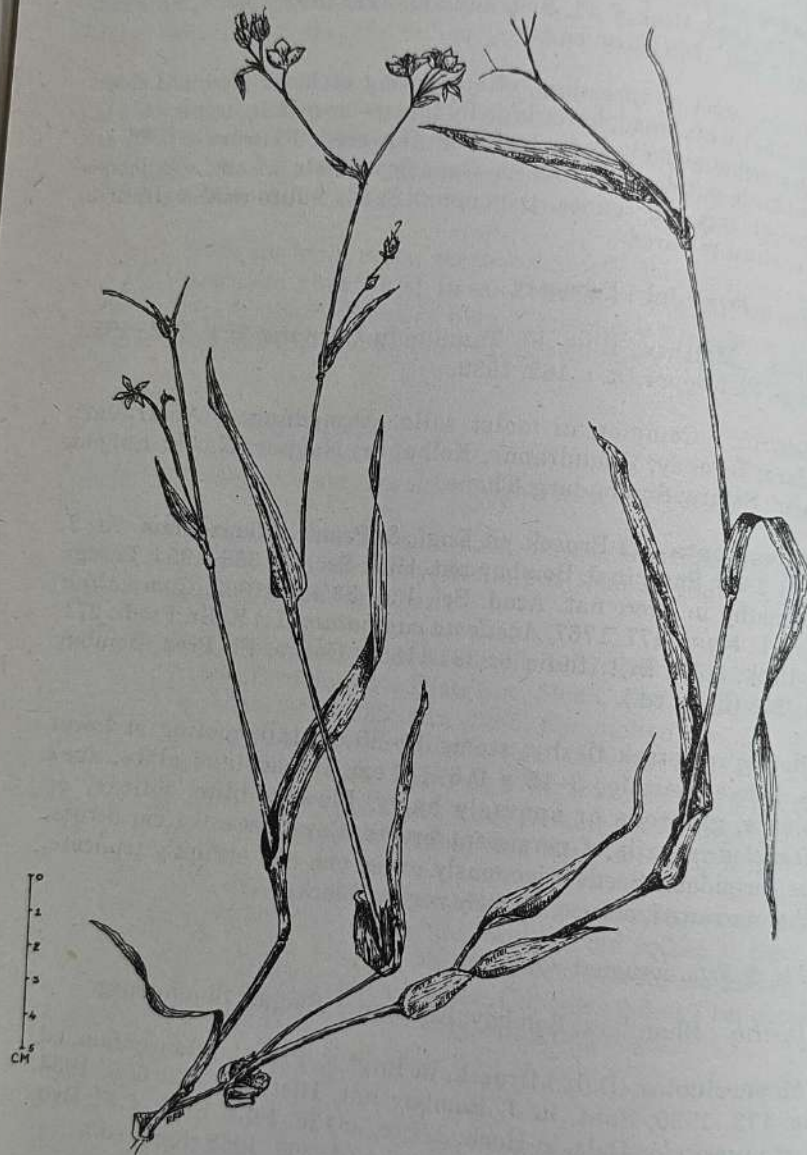
Herbs; rootstock fleshy; stems 10–25 cm tall, rooting at lower nodes. Leaves sessile, 5–15 x 0.6–1.5 cm, linear-lanceolate, apex acuminate, glabrous or sparsely hairy. Flowers blue, solitary or 2–6-fascicled in axils of persistent bracts. Capsules c 0.4 cm across, globose, cuspidate. Seeds trigonously conic, one end abruptly truncate, the other narrowed, obtuse, slightly rugose, black.

*Fls. & Frts.* : August–October.

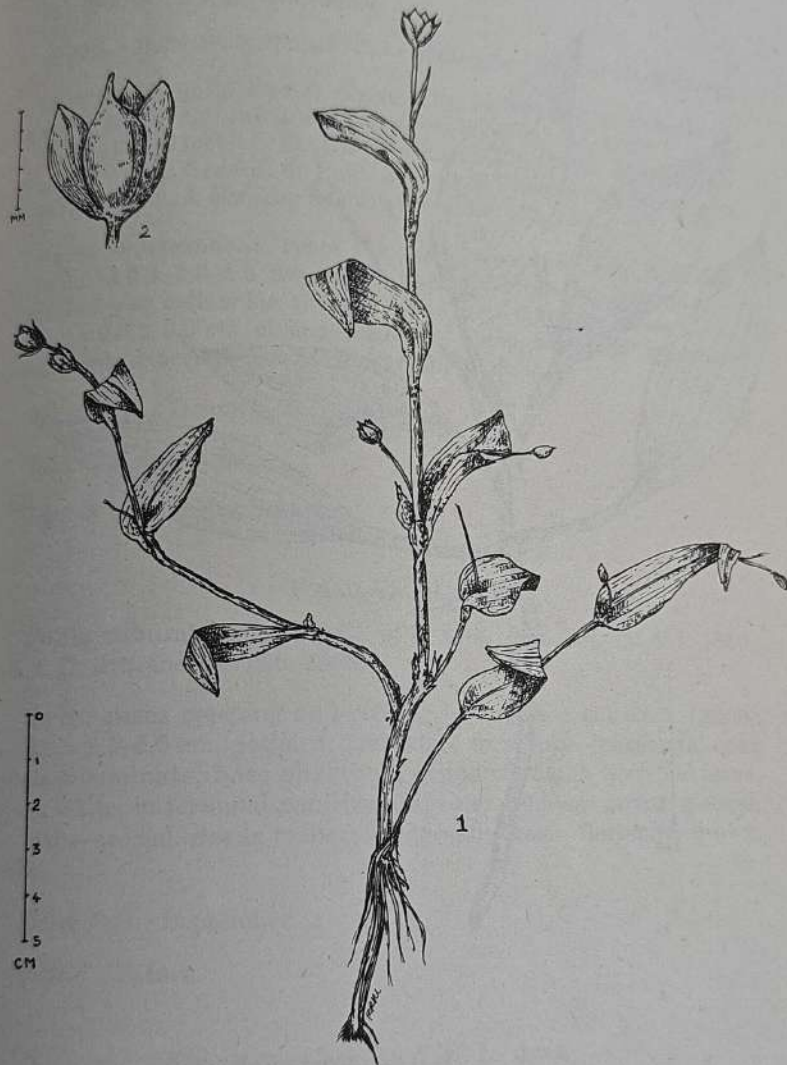
*Distrib.* : Bhandara; Bombay; Kolhapur; Raigad; Sindhudurg.

**M. versicolor** (Dalz.) Brueck. in Engl. & Prantl, Pflanzenfam. ed. 2, 15a: 173. 1930; Sant. in J. Bombay nat. Hist. Soc. 52: 658. 1954. *Aneilema versicolor* Dalz. in Hook. J. Bot. 3: 136. 1851; Hook. f. Fl. Brit. India 6: 378. 1892; Cooke, Fl. Pres. Bombay 3: 298. 1958 (Repr. ed.).

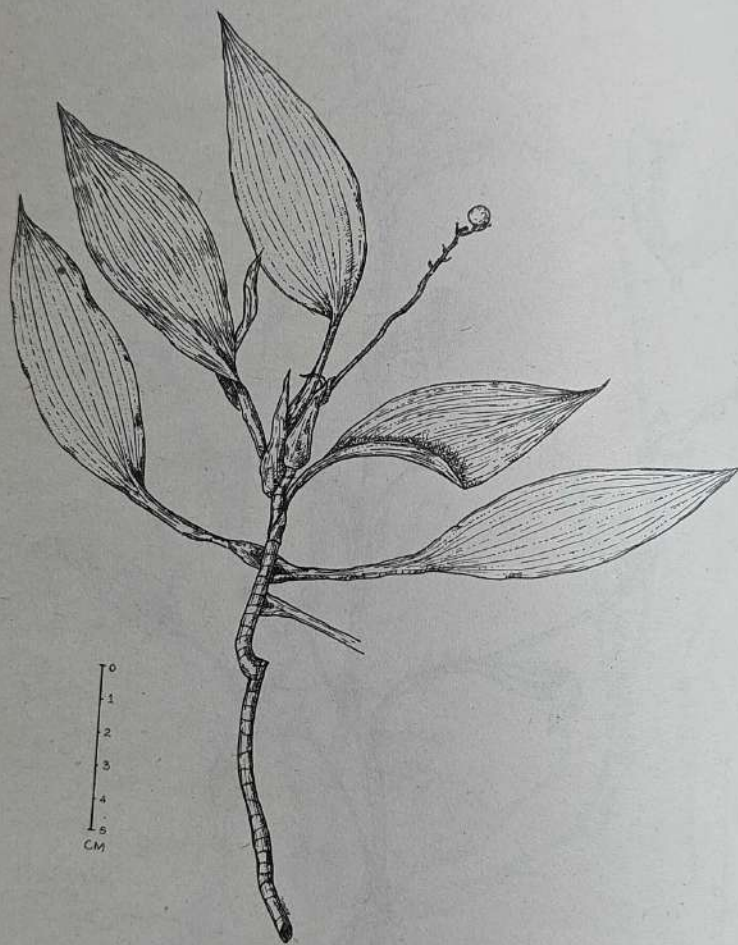
Herbs, annual; stems 5–25 cm high, rooting at lower nodes. Leaves 1.5–4.5 x 0.8–1.5 cm, ovate-lanceolate or oblong, apex acuminate, base



*Murdannia vaginata* (L.) Brueck.



*Murdannia versicolor* (Dalz.) Brueck.



*Pollia subumbellata* C.B.Cl.

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semi-amplexicaul. Flowers 0.5–0.8 cm across. Capsules c 0.5 x 0.2 cm, linear, subtrigonus, pointed, erect. Seeds cubical, small, yellowish-grey.

*Fls. & Frts.* : August–November.

*Distrib.* : Bombay; Kolhapur; Pune; Ratnagiri; Satara; Sindhudurg.

**M. wightii** Rolla Rao & Kammathy in Notes Roy. Bot. Gard. Edinb. 25: 184. 1965. *Aneilema pauciflorum* Wight, Ic. t. 2077. 1853 non Dalz. 1851; Hook. f. Fl. Brit. India 6: 378. 1892. *Murdannia pauciflora* (Wight) Brueck. in Engl. & Prantl, Pflanzenfam. ed 2, 15a: 173. 1930; Sant. in J. Bombay nat. Hist. Soc. 52: 658. 1954.

Herbs, subsucculent; roots fibrous; stems villous on one side. Leaves 1.2–3.0 x 1.0–1.5 cm, ovate, apex subacute, base rounded or cordate, hairy on both sides; sheaths with ciliate margins. Flowers blue. Capsules c 0.6 x 0.3 cm, oblong-fusiform, acute, somewhat trigonous, smooth. Seeds superposed, cubical, smooth, black.

*Fls. & Frts.* : October.

*Illus.* : Wight, *op. cit.*

*Distrib.* : Ratnagiri; Satara.

POLLIA Thunb.

**Pollia subumbellata** C.B.Cl. in J. Linn. Soc. Bot. 11: 451. 1850; Hook. f. Fl. Brit. India 5: 368. 1892.

Herbs; stems creeping and rooting below, then suberect. Leaves 7.5–12.0 x 2.5–5.0 cm, petioled, lanceolate or elliptic-lanceolate, apex caudate-acuminate, base sheathed, scaberulous on both surfaces. Flowers white, in terminal panicles. Capsules c 0.5 cm across, globose, cells many-seeded. Seeds trapezoid, dorsally much flattened, brown, smooth.

*Fls. & Frts.* : September.

*Distrib.* : Satara.

TONNINGIA Neck. ex A. H. L. Juss.

- |   |     |                     |
|---|-----|---------------------|
| 1. Filaments bearded; capsules beaked; seeds cylindric, pitted                                  | ... | <i>T. axillaris</i> |
| 1. Filaments glabrous; capsules 3-horned at apex; seeds subquadrate, smooth or obscurely pitted | ... | <i>T. cucullata</i> |

***Tonningia axillaris* (L.) O. Ktze.** Rev. Gen. Pl. 2: 721. 1891; Karthik. *et al.* Fl. Ind. Enum. Monocot. 23. 1989. *Commelina axillaris* L. Sp. Pl. 42. 1753. *Cyanotis axillaris* (L.) D. Don, Prodr. Fl. Nepal. 48. 1825; Hook. f. Fl. Brit. India 6: 388. 1892; Cooke, Fl. Pres. Nepal. 48. 305. 1958 (Repr. ed.). *Amischophacelus axillaris* (L.) Rolla Rao & Kammathy in J. Linn. Soc. Bot. 59: 306. 1966.

Herbs, annual; roots fibrous; stems slender, 15–45 cm long, diffusely branched, leafy; branches suberect and creeping below or prostrate. Leaves sessile, 5–15 x 0.43–0.75 cm, narrowly linear or linear-lanceolate, apex acute or acuminate; sheaths inflated, ciliate. Flowers violet-blue. Capsules more than 0.6 cm long, oblong-ellipsoid, shortly stipitate. Seeds c 0.25 cm long, oblong, compressed, truncate at base, rounded at apex with short, conical tip, dark brown, shining.

*Fls. & Frts.* : July–December.

*Illus.* : Mahesh. *Illus.* Fl. Delhi f. 205. 1966 (*Cyanotis axillaris*); Matthew, *Illus.* Fl. Tamilnadu Carnatic 2: t. 750. 1982.

*Distrib.* : In marshy places and wet rice fields. Akola; Amaravati; Bhandara; Bombay; Chandrapur; Kolhapur; Nagpur; Pune; Raigad; Satara; Sindhudurg; Thane; Yavatmal.

*Note* : *Amischophacelus* Rolla Rao & Kammathy (1966) is a nomenclaturally superfluous name for *Tonningia* Necker ex Jussieu (1829) as the type of both is the same—*Commelina axillaris* L. (See Farr, *et al.* Index Nom. Gen. Pl. 3: 1768. 1979).

***T. cucullata* (Roth) O. Ktze.** Rev. Gen. Pl. 722. 1891; Karthik. *et al.* Fl. Ind. Enum. Monocot. 23. 1989. *Tradescantia cucullata* Roth, Nov. Pl. Sp. 189. 1821. *Cyanotis cucullata* (Roth) Kunth, Enum. Pl. 4: 107. 1843; Hook. f. Fl. Brit. India 6: 389. 1892; Rolla Rao & Kammathy in J. Bombay nat. Hist. Soc. 59: 69. 1962. *Zygomenes cucullata* (Roth) Rolla Rao & Kammathy in Notes Roy. Bot. Gard. Edinb. 25: 187. 1965. *Amischophacelus cucullata* (Roth) Rolla Rao & Kammathy in J. Linn. Soc. Bot. 59: 306. 1966.

Herbs, glabrous or sparsely hairy, prostrate or suberect, rooting at nodes. Leaves 1.5–7.0 x 0.2–0.8 cm, linear-lanceolate. Flowers pinkish-purple. Capsules c 0.6 cm long, ellipsoid-oblong, depressed in the centre. Seeds brown.

*Fls. & Frts.* : July–December.

*Illus.* : Tad. & Venkatanarayana, Handb. S. Indian Weeds 412, f. 162. 1955 [Rev. ed. (*Cyanotis cucullata*)].

*Distrib.* : districts.

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*Distrib.* : In wet river beds and cultivated fields. Common in all districts.

**CULTIVATED SPECIES :**

**Rhoeo spathacea** (Swartz) Stearn in Bailey 5: 198. 1957.  
*Tradescantia spathacea* Swartz, Prodr. 57. 1788. *Rhoeo discolor* (L'Her.) Hance in Walp. Ann. 3: 659. 1853; Cooke, Fl. Pres. Bombay 3: 306. 1958 (Repr. ed.); Bailey, Man. Cult. Pl. 199. 1949.

Herbs, 30-60 cm tall, perennial. Leaves 15-30 x 2.5-7.5 cm, narrowly lanceolate, apex acute, sheathed at base, purplish underneath. Flowers c 0.6 cm long, white in dense cymes included in large spathes, 3-4 cm across.

*Fls.* : Almost throughout the year.

*Distrib.* : Grown in pots as border plant in gardens. Ahmednagar; Nagpur; Osmanabad; Pune.

*Note* : A native of Central America.

**Setcreasea purpurea** Boom in Acta Bot. Neerl. 4: 167. 1955.

Plants purplish; stems fleshy, first erect, later creeping. Leaves 6-10 cm long, lanceolate, pubescent. Flowers large, orchid like.

*Distrib.* : Introduced in gardens. Aurangabad; Bombay; Pune.

*Note* : It is a native of Mexico and is called 'purple heart' because of the striking purple colour of this plant in strong sun.

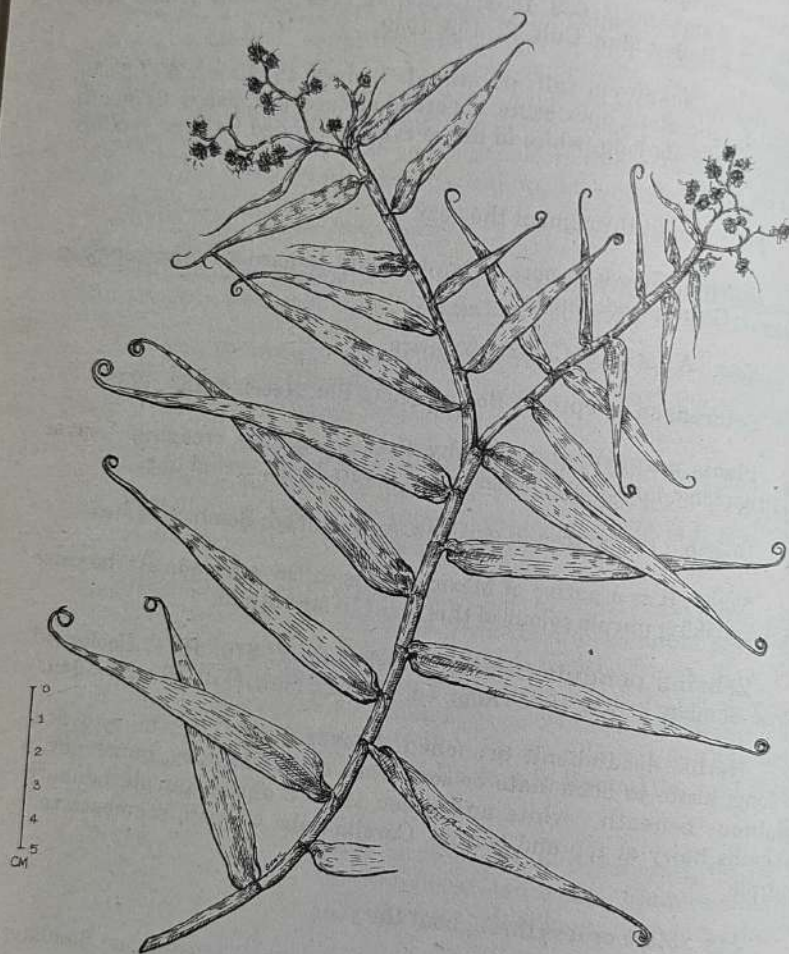
**Zebrina pendula** Schnizl in Bot. Zeit. 7: 870. 1894; Cooke, Fl. Pres. Bombay 3: 306. 1958 (Repr. ed.); Bailey, Man. Cult. Pl. 198. 1949.

Herbs, decumbent, branched. Leaves 2.7-7.5 cm long, ovate-oblong, acute to acuminate or somewhat obtuse at apex, pubescent or glabrous beneath, white and green striped above, purple beneath; sheaths hairy at top and bottom. Corolla-tube whitish, segments red-purple.

*Fls.* : More or less throughout the year.

*Distrib.* : Grown as an ornamental in pots. Ahmednagar; Bombay; Nagpur; Osmanabad; Pune.

*Note* : It is a native of Mexico.

*Flagellaria indica* L.

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2: 48. 1990

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1. Fruit

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## FLAGELLARIACEAE

## FLAGELLARIA L.

**Flagellaria indica** L. Sp. Pl. 333. 1753; Hook. f. Fl. Brit. India 6: 391. 1892; Cooke, Fl. Pres. Bombay 3: 307. 1958 (Repr. ed.).

Climbers, reed-like; stems c 2.5 cm thick towards the base, terete, smooth; branches clothed with cylindric, smooth, striate, truncate sheaths. Leaves sessile, 15–25 cm long, lanceolate from a rounded base, shortly narrowed into the sheath, drawn out at apex into a slender spiral tendril; sheaths 2-auricled at the apex. Flowers white, in shortly pedunculate, irregularly laxly branched panicles, 15–30 cm long. Drupes pisiform, red, smooth.

*Distrib.* : Konkan (Cooke, *op. cit.*).

## JUNCACEAE

## JUNCUS L.

**Juncus prismatocarpus** R. Br. Prodr. Fl. Nov. Holland. 259. 1810; Hook. f. Fl. Brit. India 6: 395. 1892; S.M. Almeida, Fl. Savantwadi 2: 48. 1990.

Tufted herbs. Leaves flat, terete, transversely septate, reduced; sheaths scarious. Inflorescence with compound cymes of heads, bracteate. Perianth lobes 6, linear, persistent. Fruit a capsule.

*Fls. & Frts.* : March–April.

*Illus.* : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 753. 1982.

*Distrib.* : Rare in wet places on sides of rice-fields and margins of shallow pools. Sindhudurg (S.M. Almeida, *op. cit.*).

## ARECACEAE (=PALMAE)

- |   |     |            |
|---|-----|------------|
| 1. Fruits covered with hard scales  | ... | CALAMUS    |
| 1. Fruits not scaly :   |     |            |
| 2. Leaves pinnatisect :   |     |            |
| 3. Leaflets without a midrib; lowest pinnae usually transformed into spines | ... | PHOENIX    |
| 3. Leaves with midrib; lowest pinnae not as above :                         |     |            |
| 4. Endocarp not fibrous, woody  | ... | MARTINEZIA |
| 4. Endocarp fibrous, woody :  |     |            |
| 5. Leaves bipinnate; albumen ruminant                                       | ... | CARYOTA    |

5. Leaves simply pinnate; albumen equable ...
2. Leaves flabelliform
6. Gynoeceum of 3 free carpels, each carpel with its own style or stigma :
7. Seeds curved, reniform
7. Seeds flat, globular ...
6. Gynoeceum of 3 appressed carpels, or carpels united where they meet; stigma one :
8. Spadix terminal :
9. Ovary 3-lobed; styles short; embryo apical, spiral ...
9. Ovary 3-celled; styles subulate; embryo dorsal ...
8. Spadix axillary, lateral :
10. Berry with a soft membranous endocarp ...
10. Berry drupaceous, with a hard endocarp ...

ARENCA

TRACHYCARPUS  
RHAPHISCORYPHA  
NANNORRHOPSSARAL  
LICUALA

## ARENCA Labill. (nom. cons.)

**Arenga wightii** Griff. in Calcutta J. Nat. Hist. 4: 475. 1845 & Palms Brit. India 167, t. 235 E. 1850; Becc. & Hook. f. in Hook. f. Fl. Brit. India 6: 422. 1892; Cooke, Fl. Pres. Bombay 3: 314. 1958 (Repr. ed.); Blatt. Palms Brit. Ind. & Ceyl. 359, t. 61. 1978 (Repr. ed.). 'Dhudasal'.

Trunks 0.9-9.0 m high, forming dense clumps. Leaves 6.0-8.4 m long; leaflets alternate, 90-105 x 3.7-5.0 cm, linear-ensiform, white underneath, with 2 large auricles at base, margins sparingly toothed from middle upwards, apex narrowed, unequally bilobed. Spadix decurved, pendulous, c 120 cm long. Male flowers distant, large, in pairs with a vertical scale interposed; female flowers solitary, each in a shallow, entire or bilobed cup. Fruits spirally arranged and crowded on lower halves of branches of spadix, globosely turbinate, broader than long, depressed at apex, crowned with remains of the stigmas. Seeds 3, convex on one face, unequally angular on the other.

Fls. & Frts. : November-January.

Illus. : Blatt. op. cit.

Distrib. : Planted as an ornamental palm in Bombay but also wild in Pune.

## CULTIVATED SPECIES :

**A. obtusifolia** Mart. Hist. Nat. Mam. 191, t. 147. 1839; Blatt. Palms Brit. Ind. & Ceyl. 363, t. 62. 1978 (Repr. ed.).

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linear, bifariol  
Drupes orbicul

Fls. & Fr

Illus. : B

Distrib. :

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1917; Backer  
Ktze. Rev. Ge  
Paris 4: 209,  
421. 1892; C  
Palms Brit. 1

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toothed, bas  
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Illus.

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Small sized palms, 4-6 m tall. Leaves imparipinnate; leaflets linear, bifarious. Male flowers binate; female flowers tricarpeal. Drupes orbicular.

*Fls. & Frts.* : November-January.

*Illus.* : Blatt. *op. cit.*

*Distrib.* : Grown in gardens. Bombay (Shinde, 1993).

*A. pinnata* (O. Ktze.) Merr. Interpr. Rumph. Herb. Amboin. 119. 1917; Backer & Bakh. f. Fl. Java 3: 188. 1968. *Saguerus pinnatus* O. Ktze. Rev. Gen. Pl. 736. 1891. *Arenga saccharifolia* Labill. in Mem. Inst. Paris 4: 209, tt. 6-7. 1803; Becc. & Hook. f. in Hook. f. Fl. Brit. India 6: 421. 1892; Cooke, Fl. Pres. Bombay 3: 315. 1958 (Repr. ed.); Blatt. Palms Brit. Ind. & Ceyl. 353, t. 60. 1978 (Repr.ed.).

Trunks 6-12 m high, stout. Leaves 6.0-8.4 m long, oblong-ovate; petiole channelled at base; leaflets 0.9-1.5 m long, linear, variously toothed, base 1-2-auricled. Spadices several, 1.8-3.0 m long. Male and female flowers together. Fruits 5.0-6.2 cm long, oblong-turbinate, surrounded at base by perianth.

*Fls. & Frts.* : September-December.

*Illus.* : Blatt. *op. cit.*

*Distrib.* : Grown as an ornamental and for toddy, sugar, sago and fibres. Bombay; Pune.

#### CALAMUS L.

- |   |                             |
|---|-----------------------------|
| 1. Leaf bases and petioles with solitary or paired spines; leaflets 3-ribbed                              | ... <i>C. pseudo-tenuis</i> |
| 1. Leaf bases and petioles with whorls, half-whorls and clusters of flat, black spines; leaflets 1-ribbed | ... <i>C. thwaitesii</i>    |

*Calamus pseudo-tenuis* Becc. & Hook.f. in Hook.f. Fl. Brit. India 6:445. 1892; Cooke, Fl. Pres. Bombay 3: 317. 1958 (Repr. ed.); Blatt. Palms Brit. Ind. & Ceyl. 306. 1978 (Repr.ed.).

Stem slender, extensively climbing; sheaths set with many unequal, straight, flat, spines. Leaves c 1.2 m long; petiole up to 20 cm long, with a few solitary spines; leaflets 20.0-37.5 x 2.0-2.5 cm, linear-lanceolate, acuminate, margins setulose. Male spadix with long, decurved spikes; male flowers usually 2-3-together. Female spadix long, branches distant, armed with short deflexed spines. Fruits ovoid, 0.75-1.2 cm in diam., beak stout, scales 9-12 in a vertical row.

*Fls. & Frts.* : February–May.

*Illus.* : Talb. For. Fl. Bombay Pres. & Sind 2: 555, f. 538. 1911.

*Distrib.* : Kolhapur; Ratnagiri; Satara; Sindhudurg.

*Notes* : This species is reported by Cooke (*op. cit.*) and Talbot (1911) from the ghats of N. Kanara district, Karnataka. Kulkarni & Sharma (J. Econ. Tax. Bot. 5: 873. 1984) have reported it for the first time from Maharashtra.

*C. thwaitesii* Becc. & Hook. f. in Hook. f. Fl. Brit. India 6: 441. 1892; Cooke, Fl. Pres. Bombay 3: 317. 1958 (Repr. ed.); Blatt. Palms Brit. Ind. & Ceyl. 296. 1978 (Repr. ed.). *C. thwaitesii* var. *canaranus* Becc. in Ann. Roy. Bot. Gard. Calcutta 1: 138, t. 12. 1908.

Climbing shrubs. Leaf rhachis and petiole covered with mealy pubescence when young, spines in a whorl. Leaves upto 55.0 x 2.0–3.5 cm, plicate, secondary nerves weak but distinct; margins and midrib near apex with black spinules. Male flowers solitary.

*Fls. & Frts.* : February–May.

*Illus.* : Becc. *op. cit.*

*Distrib.* : A few at the base of Ghats and in sacred grooves. Ratnagiri (S.M. Almeida, 1983–86).

#### CULTIVATED SPECIES :

*C. rotang* L. Sp. Pl. 325. 1753; Becc. & Hook.f. in Hook.f. Fl. Brit. India 6: 447. 1892; Cooke, Fl. Pres. Bombay 3: 318. 1958 (Repr.ed.); Blatt. Palms Brit. Ind. & Ceyl. 310, t. 55 & f. 42. 1978 (Repr.ed.).

Stems slender, scandent; sheaths flagelliferous, sparingly armed with short, flat spines. Leaves 45–60 cm long; petioles very short, stout; leaflets: lower 20–30 x 0.75–1.2 cm, upper smaller, linear-lanceolate, acuminate, 3-veined. Male spadix long, decomposed, flagelliferous, sparingly spinous; male flowers secund in 3–4 series, c 1.2 cm long. Female flowers c 0.25 cm long, scattered along slender branches of spadix. Fruit seated on minute perianth, subglobose, c 1.2 cm in diam., mucronate, scales many in a vertical series.

*Fls. & Frts.* : February–March.

*Illus.* : Blatt. *op. cit.*; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 756. 1982.

*Distrib.* : Cultivated. Pune; Sindhudurg (Wild in evergreen forests—S.M. Almeida, Fl. Savantwadi 2: 49. 1990).

*Caryota ur*  
Fl. Brit. India 6:  
ed.); Blatt. Palm  
'Bherli-mad'.

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cracks with cori  
long, fasciculat  
serrate-toothed  
petiole stout, c  
cm long. Fruit

*Fls. & Fr*

*Illus.* : F  
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*Distrib.*  
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**Caryota urens** L. Sp. Pl. 1189. 1753; Becc. & Hook.f. in Hook. f. Fl. Brit. India 6: 422. 1892; Cooke, Fl. Pres. Bombay 3: 315. 1958 (Repr. ed.); Blatt. Palms Brit. Ind. & Ceyl. 339, t. 57 & f. 48. 1978 (Repr. ed.). 'Bherli-mad'.

Trunk 12-18 m high, 30-45 cm in diam. covered with long shallow cracks with corky edges. Leaves 5.4-6.0 x 3.0-4.5 m; leaflets 10-20 cm long, fasciculate or alternate, cuneiform, obliquely truncate, irregularly serrate-toothed, upper margin produced beyond leaflets into a tail; petiole stout, c 7.5 cm thick at base. Spadix 3.0-3.6 m long; spathes 45 cm long. Fruits 1.8-2.0 cm in diam., reddish. Seeds 1 or 2.

Fls. & Frts. : Throughout the year.

Illus. : Blatt. op. cit.; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 757. 1982.

Distrib. : Ahmednagar; Bombay; Chandrapur; Kolhapur; Nagpur; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

#### CULTIVATED SPECIES :

**C. mitis** Lour. Fl. Cochinch. 2:569. 1790; Becc. & Hook. f. in Hook. f. Fl. Brit. India 6: 423. 1892; Blatt. Palms Brit. Ind. & Ceyl. 347, t. 58, f. 49. 1978 (Repr. ed.).

Small sized palms, 8-12 m high. Leaves broad, pinnatisect above, bipinnatisect to decompound below; leaflets sessile, obliquely cuneiform. Spadix erect. Flowers ternate. Fruits globose.

Fls. & Frts. : September-October.

Illus. : Blatt. op. cit.

Distrib. : Rarely grown in gardens. Bombay (Shinde, 1993).

#### CORYPHA L.

**Corypha umbraculifera** L. Sp. Pl. 1187. 1753; Becc. & Hook. f. in Hook. f. Fl. Brit. India 6: 428. 1892; Cooke, Fl. Pres. Bombay 3: 319. 1958 (Repr. ed.); Blatt. Palms Brit. Ind. & Ceyl. 72, t. 17, 18, 19 & f. 13-14. 1978 (Repr. ed.). 'Tali'.

Trunk erect, 9-24 m high, 60-90 cm diam., annulate. Leaves 2.4-4.8 m in diam., cleft to c the middle in to 80-100 linear-lanceolate, acute or 2-fid lobes; petioles 1.5-3.0 m long, stout. Spadix pyramidal,

3-6 m long, decompound; peduncle clothed with tubular spathes which are pierced by primary branches; branchlets forming pendulous spikes. Drupes shortly stipitate, globose, 3.7 cm in diam., greyish olive-coloured. Seeds globose, hard, smooth, polished.

*Fls. & Frts.* : November-January.

*Illus.* : Blatt. *op. cit.*

*Distrib.* : Bombay (Cultivated-Shinde, 1993); Pune; Sindhudurg (Cultivated-S.M. Almeida, Fl. Savantwadi 2: 50. 1990).

#### LICUALA Thunb.

*Licuala spinosa* Thunb. in Kongl. Vetensk. Acad. Nya. Handl. 3: 287. 1782; Becc. & Hook. f. in Hook. f. Fl. Brit. India 6: 431. 1892; Blatt. Palms Brit. Ind. & Ceyl. 93, f. 18. 1978 (Repr. ed.).

Stems stout, 2.4-3.0 m high, 5-10 cm in diam., densely tufted, rough with scars of fallen leaves. Leaves orbicular-reniform, c 1.2 m across, pinnules c 18, narrow-cuneate; petiole 1.2-1.4 m long, obtusely trigonous; ligule narrow. Spathes green, sprinkled with brownish scurf. Spadix a little longer than leaves. Flowers sessile, placed in twos or threes, small, ovate. Fruits obovoid c 0.6 cm long, red, 1-seeded, surrounded at base by perianth. Seeds ovoid.

*Fls. & Frts.* : December-May.

*Illus.* : Blatt. *op. cit.*

*Distrib.* : Pune.

#### CULTIVATED SPECIES :

*L. grandis* Wendl. ex Andre, Illustr. Hort. 27, t. 412. 1880; Blatt. Palms Brit. Ind. & Ceyl. 97, t. 25, f. 19. 1978 (Repr. ed.).

Short, hermaphrodite palms, 2-3 m tall. Leaves palmate, orbicular. Spadices interfoliar. Drupes ovoid-orbicular, 1 cm across.

*Fls. & Frts.* : September-October.

*Illus.* : Blatt. *op. cit.*

*Distrib.* : Commonly planted in gardens. Bombay (Shinde, 1993).

#### MARTINEZIA Ruiz. & Pav.

*Martinezia caryotaefolia* H. B. & K. Nov. Gen. & Sp. 1: 305, t. 699. 1815; Blatt. Palms Brit. Ind & Ceyl. 540, t. 101. 1978 (Repr. ed.).

Stems cylindric, 6-9 m high, 10.0-12.5 cm in diam., annulate, spiny. Leaves 8-12, arched-patent, 1.8-2.4 m long. Spadices growing from between lower leaves, c 45 cm long; peduncle slightly terete, 10-15 cm long, erecto-patent, compressed angular at base. Drupes globose; albumen solid, equable, cartilaginous.

Fls. & Frts. : September-December.

Illus. : Blatt. op. cit.

Distrib. : Bombay (Cultivated, Shinde, 1993); Pune.

NANNORRHOPS Wendl.

*Nannorrhops ritchiana* (Griff.) Aitch. in J. Linn. Soc. Bot. 19: 187. 1882 ("ritchiana"); Becc. & Hook. f. in Hook. f. Fl. Brit. India 6: 429. 1892; Cooke, Fl. Pres. Bombay 3: 318. 1958 (Repr. ed.); Blatt. Palms Brit. Ind. & Ceyl. 83, t. 21, t. 22 & f. 16. 1978 (Repr. ed.). *Chamaerops ritchiana* Griff. in Calcutta J. Nat. Hist. 5: 342. 1845.

Low gregarious shrubs. Leaves 60-120 cm long, cuneately flabellate, segments 30.0-37.5 cm long, 8-15, linear, rigid, fibres interposed; petioles 15-30 cm long. Flowers polygamous, male and hermaphrodite, in pairs, in axils of hyaline bracts. Spadix pyramidal. Drupes ovoid or subglobose; albumen horny, with a central cavity.

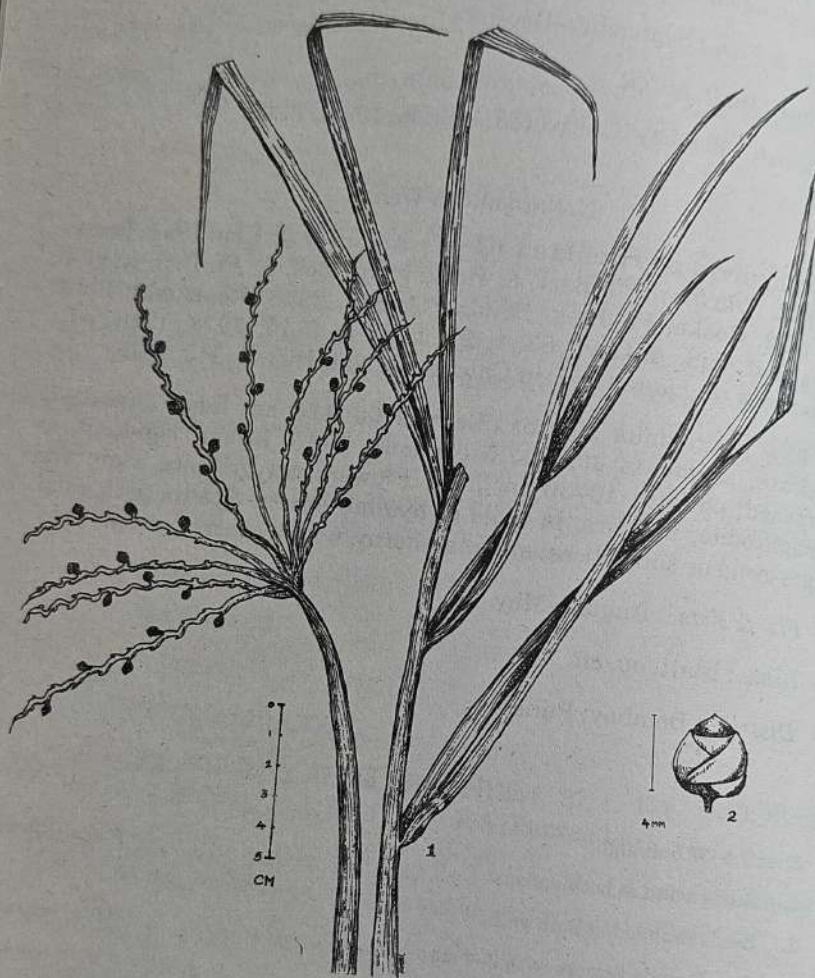
Fls. & Frts. : August-May.

Illus. : Blatt. op. cit.

Distrib. : Bombay; Pune.

PHOENIX L.

1. Stem 7.5-37.5 m high:
  2. Seeds acute at both ends ... *P. dactylifera*
  2. Seeds rounded at both ends:
    3. Female flowers with 3-4 staminodes ... *P. sylvestris*
    3. Female flowers with 6 staminodes ... *P. reclinata*
1. Stem very short, 0.15-7.5 m high or low palms, often stemless:
  4. Leaflets opposite and alternate ... *P. paludosa*
  4. Leaflets in fascicles:
    5. Fruiting peduncle short, usually concealed among leaves ... *P. acaulis*
    5. Fruiting spadix long peduncled:



*Phoenix acaulis* Roxb. ex Buch.-Ham.  
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| 6. | Stem 4.5-6.0 m high; spathe fringed with brown wool on keel ... | <i>P. robusta</i>   |
| 6. | Stem 0.15-3.0 m high; spathe with fringed margin :              |                     |
| 7. | Peduncle of both spadices much flattened ...                    | <i>P. humilis</i>   |
| 7. | Peduncle compressed ...   | <i>P. lourierii</i> |

**Phoenix acaulis** Roxb. ex Buch.-Ham. in Trans. Linn. Soc. London 15: 87. 1826; Becc. & Hook.f. in Hook.f. Fl. Brit. India 6: 426. 1892; Cooke, Fl. Pres. Bombay 3: 312. 1958 (Repr.ed.); Blatt. Palms Brit. Ind. & Ceyl. 15. 1978 (Repr.ed.). 'Shevra', 'Shilind'.

Palms dwarf, often almost stemless; stems bulbiform, 15-25 cm in diam., clothed with sheaths and bases of petioles. Leaves 0.6-1.8 m long; leaflets 25-50 x 0.75-1.75 cm, stiff, base thickened and decurrent; petioles 30 cm long or more with spines. Spadix 15-25 cm long. Spathes c 15 cm long, oblong-ellipsoid, ripens black. Seeds 0.6-0.7-5 cm long, deeply grooved.

Fls. & Frts. : November-May.

Distrib. : Maharashtra.

**P. dactylifera** L. Sp. Pl. 1188. 1753; Becc. & Hook.f. in Hook. f. Fl. Brit. India 6: 424. 1892; Blatt. Palms Brit. Ind. & Ceyl. 24, t. 8 & f. 3 (9). 1978 (Repr. ed.). 'Khajuri'.

Trees, 30-36 m tall; trunks covered with persistent bases of petioles. Leaves grey; pinnae 20-40 cm long, regularly distichous, forming an acute angle with petiole, often approximate in twos or threes on same side of petiole. Male panicles white, 15.0-22.5 cm long, on a short peduncle; peduncles of female inflorescence 0.8-1.2 cm broad, spikes 30-60 cm long. Fruits oblong, 2.3-7.5 cm long, ripens reddish or yellowish-brown. Seeds cylindric.

Fls. : March-April. Frts. : August-October.

Illus. : Blatt. op. cit.

Distrib. : Bombay (Cultivated, Shinde, 1993); Pune; Sindhudurg (Cultivated, S.M. Almedia, Fl. Savantwadi 2: 50. 1990).

**P. humilis** Royle ex Becc. & Hook.f. in Hook.f. Fl. Brit. India 6: 426. 1892; Blatt. Palms Brit. Ind. & Ceyl. 17. 1978 (Repr.ed.).

Stems short to moderately tall. Leaves subglaucous; leaflets elongate, pale-green, in usually remote fascicles. Fruiting peduncle usually very long. Fruits oblong. Groove of seeds short.

Fls. & Frts. : April-September.

*Illus.* : Blatt. *op. cit.* 18, t. 6(A), f. 1, 2 & 3 (8).

*Distrib.* : Rare in open forest. Chandrapur.

**P. lourierii** Kunth, Enum. Pl. 3: 257. 1841; Moore in Principes 7: 157. 1963. *P. humilis* var. *lourierii* (Kunth) Becc. in Males. 3: 348, 379, t. 44, f. 16-17. 1890; Becc. & Hook. f. in Hook. f. Fl. Brit. India 18: 427. 1892. *P. humilis* var. *pedunculata* (Griff.) Becc. *op. cit.* 379, 387, t. 44, f. 13-15, 18-21, 25-27. 1890; Becc. & Hook. f. in Hook. f. *op. cit.*; Cooke, Fl. Pres. Bombay 3: 312. 1958 (Repr. ed.); Blatt. Palms Brit. Ind. & Ceyl. 20, t. 68. 1978 (Repr. ed.).

Stems up to 3 m high, c 22.5 cm in diam., densely covered with bases of fallen petioles. Leaves 1.2-2.4 m long; leaflets 25-50 x 0.75-1.2 cm, fasciculate, more or less quadrifarious. Spathes c 20 cm long with fringed margin. Fruiting spadix 90-120 cm long, compressed peduncle much elongate. Fruits c 1.2 cm long, at first orange, then black.

*Fls. & Frts.* : December-February.

*Illus.* : Blatt. *op. cit.*

*Distrib.* : Western Ghats, from the Konkan southwards (Blatt. *op. cit.*);

**P. paludosa** Roxb. Fl. Ind. 3: 789. 1832; Becc. & Hook. f. in Hook. f. Fl. Brit. India 6: 427. 1892; Blatt. Palms Brit. Ind. & Ceyl. 21, t. 7 & f. 3 (2). 1978 (Repr. ed.).

Subarboreous; trunks 2.4-7.5 m high, c 8.7 cm in diam. Leaves 2.4-3.0 m long, spreading; leaflets 30-60 cm long, bifarious. Male spadix with peduncle c 45 cm long, compressed; female spadix c 45 cm long. Flowers subglobose, greenish. Fruits sessile on thickened knobs. Seeds ovoid, compressed.

*Fls. & Frts.* : March-December.

*Illus.* : Blatt. *op. cit.*

*Distrib.* : Pune.

**P. reclinata** Jacq. Fragm. Bot. 27, t. 24. 1809, Blatt. Palms Brit. Ind. & Ceyl. 39, t. 9, f. 3(4) & f. 4. 1978 (Repr. ed.).

Stems soboliferous, 9-12 m high. Leaves long; segments narrow, ensiform, numerous, in fascicles of two or three. Spathes of spadices fusiform, compressed. Male spadix ovate, consisting of a great number of thin, flexible branches; female spadix composed of 25-35 rigid branches. Fruits ovoid-ellipsoid, mucronate. Seeds oblong or subterete-cylindric.

*Illus.* : Bl

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**P. robustus**  
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*Distrib.* : Pune.

*P. robusta* (Becc.) Becc. & Hook.f. in Hook.f. Fl. Brit. India 6: 427. 1892; Cooke, Fl. Pres. Bombay 3: 311. 1958 (Repr. ed.); Blatt. Palms Brit. Ind. & Ceyl. 24. 1978 (Repr. ed.). *P. humilis* var. *robusta* Becc. in Males. 3: 348, 384. 1890. 'Shelu'.

Trunks 4.5–6.0 m high, c 37.5 cm in diam., closely clothed and appearing tessellated from spirally arranged sheaths of fallen leaves. Leaves 0.9–1.5 m long, shining; leaflets in fascicles, quadrifarious, strongly conduplicate. Spathes fringed with brown wool on the keel. Fruiting peduncles c 60 cm long. Ripe fruits brown.

*Fls. & Frts.* : January–March.

*Illus.* : Mahabale & Parthasarathy in J. Bombay nat. Hist. Soc. 60: 378, t. 7, f. 25. 1963.

*Distrib.* : Nasik (Cooke, *op. cit.*); Pune; Thane.

*P. sylvestris* (L.) Roxb. Fl. Ind. 3: 787. 1832; Becc. & Hook. f. in Hook. f. Fl. Brit. India 6: 425. 1892; Cooke, Fl. Pres. Bombay 3: 311. 1958 (Repr. ed.); Blatt. Palms Brit. Ind. Ceyl. 3, t. 2. 1978 (Repr. ed.). *Elate sylvestris* L. Sp. Pl. 1189.1753; Moore ex Dransfield in Taxon 28: 67.1979. 'Shindi'.

Trunks 9–15 m high, rough from persistent bases of leaf-sheaths. Leaves 3.0–4.5 m long, greyish-green; pinnules numerous, densely fascicled, 15–45 x 2.0–2.5 cm, ensiform. Male flowers: white; spadix 60–90 cm long, erect; spathes woody; spikes numerous towards apex of peduncle in fascicles, simple. Female flowers: spadix and spathe same as in male; spikes arranged in distinct groups, fruiting spadix c 90 cm long. Fruits 2.5–3.0 cm long, oblong-ellipsoid, orange-yellow. Seeds rounded at the ends.

*Fls. & Frts.* : January–October.

*Illus.* : Blatt. *op. cit.*

*Distrib.* : Ahmednagar; Amaravati; Bombay; Jalgaon; Kolhapur; Nagpur; Nasik; Osmanabad; Pune; Raigad, Satara, Sindhudurg; Thane; Yavatmal.

#### CULTIVATED SPECIES :

*P. rupicola* T. And. in J. Linn. Soc. 11: 13. 1869; Cooke, Fl. Pres. Bombay 2: 313. 1958 (Repr. ed.); Blatt. Palms Brit. Ind. & Ceyl. 14, t. 5. 1978 (Repr. ed.).

Short dioecious palms, 7–8 m tall. Leaves pinnate; leaflets bifarious. Male spadix yellow, interfoliar; female spadix green. Flowers green. Berries oblong or obovoid-oblong.

Fls. : April; Frts. : December.

Illus. : Blatt. *op. cit.*

Distrib. : Occasionally found in gardens. Bombay (Shinde, 1993).

#### RHAPHIS Walp.

**Rhaphis flabelliformis** Ait. Hort. Kew. ed. 1, 3: 473. 1789; Blatt. Palms Brit. Ind. & Ceyl. 56, t. 13A, ff. 9 & 10. 1978 (Repr. ed.).

Stems 1.5–1.8 m high, sheathed by reticulate persistent bases of leaves. Leaves c 8, petioled; segments subplicate, ciliate-spinulose along edges and keel of plaits, indented, erose at end. Spadix sparse, paniculately branched, 10.0–12.5 cm long; spikelets with sessile yellowish flowers.

Illus. : Blatt. *op. cit.*

Distrib. : Pune.

#### SABAL Adans.

**Sabal adansonii** Guersent in Bull. Soc. Philomat 5: 206, t. 25. 1803; Blatt. Palms Brit. Ind. & Ceyl. 136, t. 30. 1978 (Repr. ed.).

Rhizome subterranean. Leaves orbicular, divided into 20–30 segments. Spadix erect, 0.6–1.5 m long, with 5–6 branches, each one arising from within a spathe. Flowers inserted spirally on branchlets. Fruits supported by perianth, spherical, ripens black. Seeds globular.

Illus. : Blatt. *op. cit.*

Distrib. : Pune.

#### CULTIVATED SPECIES :

**S. palmetto** (Walter) Lodd. ex R. & S. Syst. Veg. 7 (2): 1487. 1830; Blatt. Palms Brit. Ind. & Ceyl. 141, t. 31. 1978 (Repr. ed.). *Corypha palmetto* Walter, Fl. Carol. 119. 1788.

Hermaphrodite palms, 9–20 m tall. Leaves palmate, flabelliform. Spadices as long as or longer than leaves, axillary, in solitary or racemose spikes. Drupes globose, 1-seeded.

Fls. & Frts. : October–February.

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*Illus.* : Blatt. *op. cit.*

*Distrib.* : Commonly planted in garden. Bombay (Shinde, 1993).

TRACHYCARPUS Wendl.

**Trachycarpus excelsa** Wendl. in Bull. Soc. Fr. 8: 329. 1861; Becc. & Hook. f. in Hook. f. Fl. Brit. India 6: 436. 1892; Blatt. Palms Brit. Ind. & Ceyl. 52, t. 11B & f. 8. 1978 (Repr. ed.).

Trunks covered with old leaf sheaths. Leaves forming a spreading crown, semiorbicular, c 45 x 45 cm, deeply plaited. Spadix emerging from several imbricating leafy bracts and constituting a dense thyrsoid panicle. Flowers yellow, clustered, 2-4 on a tubercle, sessile. Drupes reniform, deeply hollowed on one side.

*Illus.* : Blatt. *op. cit.*

*Distrib.* : Pune.

CULTIVATED SPECIES :

**Acanthorrhiza aculeata** Wendl. in Kerch. Palm. 230. 1878.

A small sized palm, 4-8 m high. Leaves flabellate; leaflets bifid. Inflorescence spadix, interfoliar. Flowers creamy, globose ovoid, solitary at each locus. Fruits c 1.7 cm across.

*Fls. & Frts.* : September-December.

*Distrib.* : Grown in gardens. Bombay (Shinde, 1993).

**Actinorhytis calapparia** (Bl.) Wendl. & Drude ex Scheffer in Ann. Jard. Bot. Buitenz. 1: 156. 1876; Cooke, Fl. Pres. Bombay 3: 320. 1958 (Repr. ed.); Blatt. Palms Brit. Ind. & Ceyl. 450, t. 86. 1978 (Repr. ed.). *Areca calapparia* Bl. Rumph. 2, t. 100, f. 2. 1838. 'Ram-supari'.

Stems c 12 m high; crown dark green, ample. Leaves 2.4-2.7 m long, 10.0-11.2 cm broad, lanceolate-acuminate; pinnae 60 x 3.0-3.7 cm, linear, acuminate, unequally bipartite. Spadix ascending, green. Spathes 2. Lower flowers: 1 female between 2 males, upper males in pairs. Fruiting spadix spreading; branches angular, thickened at base. Fruits pendulous, ovoid, orange-yellow. Seed 1, erect.

*Fls. & Frts.* : November-January.

*Illus.* : Blatt. *op. cit.*

*Distrib.* : Planted. Ratnagiri.

**Archontophoenix cunninghamii** Wendl. & Drude in *Linnaea* 39: 214. 1875; Blatt. Palms Brit. Ind. & Ceyl. 459, t. 90. 1978 (Repr. ed.).

Medium sized unarmed palms, 10–18 m high. Leaves 2.4–3 m long; leaflets numerous, lanceolate, apex usually unequally bifid. Inflorescence a corymb like panicle, arising from below leaves. Flowers white. Drupes globose–ellipsoid, brown.

*Fls. & Frts.* : October–April.

*Illus.* : Blatt. *op. cit.*

*Distrib.* : Grown as an ornamental (Shinde, 1993).

**Areca catechu** L. Sp. Pl. 1189. 1753; Becc. & Hook. f. in Hook. f. Fl. Brit. India 6: 405. 1892; Cooke, Fl. Pres. Bombay 3: 319. 1958 (Repr. ed.); Blatt. Palms Brit. Ind. & Ceyl. 471, t. 92. 1978 (Repr. ed.). 'Supari'.

Trunk solitary, straight, 12–30 m high, c 50 cm in circumference, uniformly thick. Leaves 1.2–1.8 m long; leaflets numerous, 30–60 cm long, upper confluent. Spathes double, compressed. Spadix much branched, bearing male and female flowers. Male flowers numerous, sessile; female flowers solitary, or 2 or 3, sessile. Fruits 3.7–5.0 cm long, smooth, orange or scarlet, supported by persistent perianth. Seeds in upper part.

*Fls. & Frts.* : Throughout the year.

*Illus.* : Blatt. *op. cit.*; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 754. 1982.

*Distrib.* : Cultivated. Bombay; Nagpur; Raigad; Ratnagiri; Sindhudurg; Thane.

**Attalea speciosa** Mart. Palm Bras. 138, t. 96, f. 3. 1823 & in Hist. Nat. Palm. 298, t. 169, f. 4. 1845; Blatt. Palms Brit. Ind. & Ceyl. 496, t. 96. 1978 (Repr. ed.).

Trees, monoecious, 18–20 m tall. Leaves paripinnate; leaflets reduplicate. Spadix interfoliar, consists of racemes of spikes, yellow, androgynous or male. Drupes densely ferruginous–tomentose, fibrous.

*Fls. & Frts.* : December–March.

*Illus.* : Blatt. *op. cit.*

*Distrib.* : Rarely grown in gardens. Bombay (Shinde, 1993).

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*Bentinckia nicobarica* (Kurz) Becc. in Ann. Jard. Bot. Buitenz. 2: 165. 1885; Becc. & Hook. f. in Hook. f. Fl. Brit. India 6: 418. 1892; Blatt. Palms Brit. Ind. & Ceyl. 376, t. 67. 1978 (Repr. ed.). *Orania nicobarica* Kurz in J. Bot. 4: 331, t. 171, figs. 19-25. 1875.

Slender palms, 13-15 m tall. Leaves pinnate; leaflets linear, obtusely bifid. Spadix androgynous, decomposed, pendulous. Flowers in long spikes. Fruits globose.

Fls. & Frts. : September-October.

Illus. : Kurz, *op. cit.*; Blatt. *op. cit.*

Distrib. : Single tree in Victoria garden (Shinde, 1993).

*Borassus flabellifer* L. Sp. Pl. 1187. 1753; Becc. & Hook. f. in Hook. f. Fl. Brit. India 6: 482. 1892; Cooke, Fl. Pres. Bombay 3:321. 1958 (Repr. ed.); Blatt. Palms Brit. Ind. & Ceyl. 174, tt. 38 & 39. 1978 (Repr. ed.). 'Tad', 'Tadi', 'Tar'.

Trunks up to 30 m high, 60 cm in diam., near the ground. Leaves 0.9-1.5 m in diam., segments 60-80, folded along midrib, linear-lanceolate; petioles 60-120 cm long. Flowers dioecious. Spadix large, simply branched, sheathed with numerous open spathes. Male flowers small, in spikes; female flowers larger, globose c 2.5 cm in diam. Fruit a large subglobose brown drupe c 15 cm in diam. or more. Seeds oblong, 3-lobed at top.

Fls. & Frts. : March-August.

Illus. : Blatt. *op. cit.*; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 755. 1982.

Distrib. : Cultivated. Bombay; Chandrapur; Pune; Raigad; Ratnagiri; Sindhudurg; Thane; Yavatmal.

*Butia yatay* (Mart.) Becc. in Agric. Colon. 10: 498. 1916. *Cocos yatay* Mart. Hist. Nat. Palms. 289. 1845 & Orbig. 7: tt. 1 & 30, f. 1. 1847; Blatt. Palms Brit. Ind. & Ceyl. 531. 1978 (Repr. ed.).

Small, monoecious palms, 3-5 m high. Leaves pinnate; leaflets rigid, linear-lanceolate. Spadix interfoliar, raceme. Drupes oblong.

Fls. & Frts. : September-December.

Distrib. : One plant in Victoria Garden (Shinde, 1993).

*Chrysalidocarpus lutescens* Wendl. in Bot. Zeit. 36: 171. 1878; Blatt. Palms Brit. Ind. & Ceyl. 381, t. 68 A. 1978 (Repr. ed.).

Small sized monoecious palms, 7–8 m tall. Leaves 6–8 in a crown; leaflets 40–50 pairs, narrowly lanceolate. Flowers white, sessile. Fruits resupinate, ellipsoid, turbinate, black–violet.

*Fls. & Frts.* : September–October.

*Illus.* : Blatt. *op. cit.*

*Distrib.* : Commonly grown in gardens. Bombay (Shinde, 1993).

**C. madagascariensis** Becc. in Engl. Bot. Jahrb. 38:35. 1907; Blatt. Palms Brit. Ind. & Ceyl. 385, t. 69. 1978. (Repr. ed.).

A small sized, monoecious palm, 10–12 m tall. Leaves interruptedly pinnate; leaflets c 100, linear in fascicles of 3–4. Spadix interfoliar. Fruits oblong–obovoid.

*Fls. & Frts.* : March–April.

*Illus.* : Blatt. *op. cit.*

*Distrib.* : Occasionally grown in gardens. Bombay (Shinde, 1993).

**Cocos nucifera** L. Sp. Pl. 1188. 1753; Becc. & Hook. f. in Hook. f. Fl. Brit. India 6: 482. 1892; Cooke, Fl. Pres. Bombay 3: 322. 1958 (Repr. ed.); Blatt. Palms Brit. Ind. & Ceyl. 499, t. 97. 1978 (Repr. ed.). 'Narel'.

Trunk 12–24 m high, annulate, thickened at base. Leaves 1.8–4.5 m long; leaflets equidistant, 60–90 cm long, linear–lanceolate, coriaceous; petioles 0.9–1.5 m long, stout. Spadix 1.2–1.8 m long, stout, androgynous, simply paniced; branches bearing scattered female flowers towards their bases and numerous males above. Lower spathes 60–90 cm long. Fruits 20–30 cm long, 3–gonously obovoid or subglobose, green or yellowish.

*Fls. & Frts.* : Throughout the year.

*Illus.* : Blatt. *op. cit.*; Matthew, Illus. Fl. Tamilnadu Carnatic 2: tt. 758 & 759. 1982.

*Distrib.* : Planted. Ahmednagar; Bombay; Nagpur; Osmanabad; Pune; Raigad; Ratnagiri, Sindhudurg; Thane.

**C. plumosa** Hook. f. in Bot. Mag. t. 5180. 1860; Cooke, Fl. Pres. Bombay 3: 323. 1958 (Repr. ed.); Blatt. Palms Brit. Ind. & Ceyl. 529, t. 98. 1978 (Repr. ed.).

Stems, erect, c 12 m high, 25–30 cm in diam. Leaves 3.6–4.5 m long, petiolate, lanceolate, recurved; leaflets numerous, solitary, or more

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usually two to four, aggregated, springing from near each other. Spadix axillary, substipitate; spathes 75–90 cm long; branches drooping, wax-like, loaded with flowers of two kinds which are sessile, some females, but mostly male. Drupes apiculate, c 2.5 cm long.

*Illus.* : Blatt. *op. cit.*

*Distrib.* : Grown in gardens. Bombay; Pune.

**Dictyosperma aureum** Wendl. & Drude in Kerch. Palm. 243. 1878. *D. album* Wendl. var *aureum* Balf. f. in Baker, Fl. Maurit. & Seych. 384. 1877; Blatt. Palms Brit. Ind. & Ceyl. 456, t. 88. 1978 (Repr. ed.).

Monoecious palms, 10–12 m high. Leaves pinnate; leaflets reduplicate at base. Spadix dark green, intrafoliar, erect. Flowers green, often distichous at base of branches. Fruits cylindrico-conic, black.

*Fls. & Frts.* : September–January.

*Illus.* : Blatt. *op. cit.*

*Distrib.* : Occasionally grown in gardens. Bombay (Shinde, 1993).

**Didymosperma nana** (Mart.) Wendl. & Drude in Kerch. Pal. 243. 1878; Blatt. Palms Brit. Ind. & Ceyl. 364. 1978 (Repr. ed.). *Wallichia nana* Mart. Hist. Nat. Palm. 190. 1838.

Small sized erect palms, 3–4 m high. Leaves pinnatisect; leaflets 5, terminal one flabelliform. Spadix interfoliar. Fruits white, oblong.

*Fls. & Frts.* : September–November.

*Distrib.* : Rare in Victoria garden–Bombay (Shinde, 1993).

**Elaeis guineensis** Jacq. Select. Am. 280, t. 172. 1763; Blatt. Palms Brit. Ind. & Ceyl. 488, t. 95. 1978 (Repr. ed.).

A robust palm, 8–15 m tall. Leaves pinnate, 20–50 in terminal crown; leaflets 100–160 pairs, lanceolate-linear. Spadix interfoliar. Fruits ovoid, fibrous.

*Fls.* : January; *Frts.* : October.

*Illus.* : Blatt. *op. cit.*

*Distrib.* : Commonly grown in gardens. Bombay (Shinde, 1993).

**Euterpe edulis** Mart. Hist. Nat. Palm. 33, t. 32. 1824.

Slender, monoecious palms, 12–18 m high. Leaves pinnate; leaflets binate. Spadix interfoliar. Flowers greenish-yellow.

*Fls. & Frts.* : February.

*Distrib.* : Rare in gardens. Bombay (Shinde, 1993).

**Howeia foresteriana** Becc. in Malesia 1: 66. 1877; Blatt. Palms Brit. Ind. & Ceyl. 405. 1978 (Repr. ed.).

Stems annulate, c 18 m high, 60 cm in diam. Leaves 3.0–3.6 m long; sheaths green, yellowish on median line; petioles stout, c 1.5 m long; segments numerous, ensiform, slightly attenuate towards base. Spadices arising from a common membranous marcescent spathe, c 75 cm long. Flowers ternate : male flowers symmetrical; female flowers a little smaller than male flowers. Fruits c 2.5 cm long, ovoid-ellipsoid, almost equally attenuate towards both ends. Seeds erect, ovate, rotundate at the apex or with a slightly conical point.

*Distrib.* : Cultivated in gardens. Pune.

**Hyophorbe amaricaulis** Mart. Hist. Nat. Palm. 3 : 309. 1849; Blatt. Palms Brit. Ind. & Ceyl. 386, t. 70A & B. 1978 (Repr. ed.).

Stems c 18 m high, 37.5–60.0 cm in diam. near base. Leaf-sheaths cylindrical; petioles 30–45 cm long; leaflets in 40–60 pairs, lanceolate, acuminate, c 45 x 5 cm. Spadix with clustered branches; peduncle 30 cm long. Fruits ellipsoid-oblong. Seeds ellipsoid.

*Fls. & Frts.* : September–February.

*Illus.* : Blatt. op. cit.

*Distrib.* : Cultivated. Bombay; Pune.

**H. verschaffeltii** H. Wendl. Illust. 13, t. 462, 463. 1866; Blatt. Palms Brit. Ind. & Ceyl. 389, t. 71. 1978 (Repr. ed.).

Stems, 7.5–9.0 m high, 5–30 cm in diam. at base. Petioles c 7.5 cm long. Leaflets 30–50 pairs, acuminate, 50–75 x 2.5 cm. Spadix with clustered branches; peduncles 20–35 cm long. Perianth orange; pistillode of male flower elongated, conical. Fruits cylindrical-oblong. Seeds subcylindrical.

*Illus.* : Blatt. op. cit.

*Distrib.* : Cultivated. Bombay; Pune.

**Hyphaene dichotoma** (White) Furtado in Gard. Bull. Singapore 25: 209. 1970. *Borassus dichotoma* White in Grah. Cat. Bombay Pl. 226. 1839. *Hyphaene indica* Becc. in Agri. Colon. 2: 173. 1908; Blatt. Palms Brit. India & Ceyl. 157, t. 33–34, f. 24. 1978 (Repr. ed.). 'Ravan-tal'.

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90 cm from ape  
stout, c 100 cm  
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Stems dichotomously branched. Leaves suborbicular, measuring c 90 cm from apex of central segments; petioles c 90 cm long. Male spadix stout, c 100 cm long, and c 2.5 cm broad at peduncular part; spathes tubular. Flowers 3 in each scale and rising successively. Fruits obovoid-pyriform, gradually attenuate at base. Seeds obovoid.

*Fls. & Frts.* : April–May.

*Illus.* : Blatt. *op. cit.*

*Distrib.* : Cultivated. Bombay (Blatt. *op. cit.*); Raigad; Thane.

**H. thebaica** Mart. Hist. Nat. Palm. 3: 225, tt. 131, 133. 1845; Woodr. in J. Bombay nat. Hist. Soc. 12 : 526. 1899; Cooke, Fl. Pres. Bombay 3: 320. 1958 (Repr. ed); Blatt. Palms Brit. Ind. & Ceyl. 161, t. 35. 1978 (Repr. ed.).

Stems terete, 3–9 m high, c 30 cm in diam., simple or more frequently dichotomously branched. Leaves 20–30 in a terminal crown on each branch; petioles sheathing at base; lamina suborbicular, lobes 20 or more, linear-lanceolate, acuminate, c 30.0 x 2.5 cm. Male spadix 120 x 2.5–5.0 cm; spathes cylindrical; flowers in pairs. Female spadix like male. Fruits obliquely ovoid or oblong, irregular, 5.0–7.5 x 2.5–5.0 cm. Seeds more or less ovoid-conical, flattened at base.

*Fls. & Frts.* : January–April.

*Illus.* : Blatt. *op. cit.*

*Distrib.* : Cultivated. Bombay; Raigad; Pune; Thane.

**Latania commersonii** Gmel. Syst. 2: 1035. 1791; Blatt. Palms Brit. Ind. & Ceyl. 168, t. 36. 1978 (Repr. ed.).

Medium sized dioecious palms, 9–12 m tall. Leaves long petioled, palmate-flabelliform. Spadix axillary, of elongated panicles, distichously branched. Drupes globose, 3–4 cm across, smooth, brown.

*Fls. & Frts.* : October.

*Illus.* : Blatt. *op. cit.*

*Distrib.* : Occasionally grown in gardens. Bombay (Shinde, 1993).

**Livistona chinensis** R. Br. Prodr. 268. 1810; Becc. & Hook. f. in Hook. f. Fl. Brit. India 6: 434. 1892; Cooke, Fl. Pres. Bombay 3: 320. 1958 (Repr. ed.); Blatt. Palms Brit. Ind. & Ceyl. 104, t. 26. 1978 (Repr. ed.).

Stems 6–9 m high, stout, obscurely annulate. Leaves reniformly flabellate, 1.2–1.8 m in diam.; segments 50–60, linear-lanceolate,

acuminate; petioles c 1.8 m long, 15 cm broad; ligule ovate-trigonous. Spadix paniculate-racemose, spreading, surrounded at base and the primary branches by spathes. Flowers small, white, usually 4-together. Berries olive-shaped, oblong. Seeds oblong, greyish.

*Fls. & Frts.* : January-February.

*Illus.* : Blatt. *op. cit.*

*Distrib.* : Cultivated. Bombay; Nagpur; Pune; Ratnagiri; Sindhudurg.

**L. rotundifolia** Mart. Hist. Nat. Palm. 3: 241. 1836-1850; Blatt. Palms Brit. Ind. & Ceyl. 107. 1978 (Repr. ed.).

Stems 12-15 m high, 30-45 cm in diam., obscurely annulate. Leaves 0.9-1.5 m in diam., suborbicular; segments 60-90, united in the lower third, each segment bifid to middle; petioles c 1.8 m long. Spadix 0.9-1.5 m long, porphyry-red. Spathes compressed-cylindric, obliquely truncate. Flowers 3-4-aggregate, small, globose, yellow. Berries depressed-globose. Seeds globose, ferruginous.

*Fls. & Frts.* : September-June.

*Distrib.* : Cultivated. Bombay; Pune.

**Oreodoxa regia** H. B. & K. Nov. Gen. & Sp. 1: 305. 1815; Cooke Fl. Pres. Bombay 3: 321. 1958 (Repr. ed.); Blatt. Palms Brit. Ind. & Ceyl. 396, t. 73. 1978 (Repr. ed.).

Stems annulate, 12-18 m high. Leaves large; leaflets ensiform, straight and gradually narrow above, to an acuminate, rigid, bifid apex. Spathes 2. Spadices 3-4 simultaneously. Flowers light coloured, ternate almost to end of branchlets; male flowers larger than female. Fruits globose-obovoid, gibbous, with a round top. Seeds broadly ovoid-ellipsoid, rounded at both ends.

*Fls. & Frts.* : October-January.

*Illus.* : Blatt. *op. cit.*

*Distrib.* : Cultivated. Ahmednagar; Bombay; Pune; Sindhudurg.

**Pritchardia pacifica** Seem. & Wendl. in Bonpl. 9: 260, t. 15. 1861; Blatt. Palms Brit. Ind. & Ceyl. 116, t. 29. 1978 (Repr. ed.).

Short monoecious palms, 9-12 m tall. Leaves palmate, forming a terminal crown. Spadix orange, axillary, solitary. Flowers brownish-yellow. Drupes globose, black.

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*Fls. & Frts.* : September–January.

*Illus.* : Blatt, *op. cit.*

*Distrib.* : Commonly grown in gardens. Bombay (Shinde, 1993).

**Ptychosperma elegans** (R. Br.) Bl. in Rumphia 2: 118. 1843; Blatt. Palms Brit. Ind. & Ceyl. 444. 1978 (Repr. ed.); McCurrach, Palms of the World 193, t. 1960. *Seaforthia elegans* R. Br. Prodr. Fl. Nov. Holl. 267. 1818.

Slender, monoecious palms, 6–8 m tall. Leaves pinnate, recurved and arching, in a terminal crown; leaflets linear. Spadix intrafoliar. Fruits ovoid.

*Fls. & Frts.* : September–March.

*Illus.* : McCurrach, *op. cit.*

*Distrib.* : Common in gardens and private compounds. Bombay (Shinde, 1993).

**Thrinax barbadensis** Lodd. in Mart. Hist. Nat. Palm. 257. 1838; Blatt. Palms Brit. Ind. & Ceyl. 68. 1978 (Repr. ed.).

Medium sized hermaphrodite palms, 10–15 m tall. Leaves palmatifid, lanceolate. Spadix interfoliar, in compound panicles. Flowers white in racemes. Drupes globose, c 6 mm across.

*Fls. & Frts.* : September–December.

*Distrib.* : Commonly grown in gardens in Bombay (Shinde, 1993).

**Washingtonia filifera** Wendl. in Bot. Zeit. 37: 68. 1879; Cooke, Fl. Pres. Bombay 3: 321. 1958 (Repr. ed.); Blatt. Palms Brit. Ind. & Ceyl. 120, f. 20. 1978 (Repr. ed.).

Stems 18–21 m high, slightly thickened near base. Leaves c 100 cm from apex of petiole to end of central segments; limb divided to c the middle into c 80 segments. Spadices arcuate-nutant, longer than leaves. Buds lanceolate-acuminate, obscurely angular. Fruits ovoid, black, usually, 1.0 x 0.7 cm, surmounted by permanent, setiform, long styles. Seeds ovoid-ellipsoid, equally rounded at two extremities.

*Illus.* : Blatt, *op. cit.*

*Distrib.* : Cultivated. Pune (Cooke, *op. cit.*).

## PANDANACEAE

## PANDANUS Parkinson

1. Carpels distinct; spathes of males not scented, yellow; style forked ... *P. furcatus*
1. Carpels connate in groups; spathes of males strongly scented, white; style not forked ... *P. odoratissimus*

*Pandanus furcatus* Roxb. Fl. Ind. 3: 744. 1832; Hook. f. Fl. Brit. India 6: 484. 1893 p.p.; Cooke, Fl. Pres. Bombay 3: 324. 1958 (Repr. ed.).

Trees; trunk 3-9 m high, branched, with aerial roots from the lower part of the trunk. Leaves 200-450 x 7.5-15.0 cm, linear-lanceolate, apex acute, base caudate-acuminate, margins and midrib armed with short stout spines. Male flowers in compound cylindric spikes, 10-15 x 2-3 cm, densely floriferous; female flowers in solitary spadix; syncarpium ripens orange-red, 15.0-22.5 cm long. Drupes obconic with a convex crown.

Fls. & Frts. : October-November.

Distrib. : Bombay; Pune; Sindhudurg.

*P. odoratissimus* L. f. Suppl. 64. 1781; St. John in Taxon 12: 201. 1963. *P. tectorius* auct. pl. non Soland. ex Parkinson, J. Voy. H.M.S. End. 46. 1773; Cooke, Fl. Pres. Bombay 3: 324. 1958 (Repr. ed.). *P. fascicularis* Lam. Encycl. 1: 372, t. 1. 1785; Hook. f. Fl. Brit. India 6: 485. 1893. 'Keura'.

Shrubby, up to 6 m high; stems supported by aerial roots. Leaves glaucous-green, 90-150 cm long, ensiform, caudate acuminate, coriaceous, the marginal spines pointing forward, those on the midrib pointing forward or backward. Male flowers : spadix with numerous, subsessile, cylindric spikes, 5-10 x 2.5-3.7 cm enclosed in long white fragrant, caudate-acuminate spathes. Female flowers: spadix solitary, c 5 cm in diam. Syncarpium oblong or globose, 15-25 x 15-25 cm, yellow or red. Drupes numerous, each consisting of 5-12 carpels.

Fls. & Frts. : March-December.

Illus. : B.C. Stone in Sald. & Nicols. Fl. Hassan Dt. 779, f. 116 A-Ab. 1976 (*P. fascicularis*).

Distrib. : Ahmednagar; Bombay; Jalgaon; Kolhapur; Osmanabad; Pune; Raigad; Ratnagiri; Sindhudurg; Thane.

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## TYPHACEAE

## TYPHA L.

*Typha angustifolia* L. Sp. Pl. 971. 1753; Backer in Steenis, Fl. Males. 1, 4: 243, f. 1. 1951. *T. angustata* Bory & Chaub. Exped. Sci. Moree Bot. 2, 1: 338. 1832; Hook. f. Fl. Brit. India 6: 489. 1893; Cooke, Fl. Pres. Bombay 3: 326. 1958 (Repr.ed.); Subr. Aquat. Ang. 74. 1962. 'Jungli-bajri', 'Pan-kanis', 'Pun', 'Rambejra'.

Herbs, 1-2 m high, robust, tufted, perennial. Leaves 1.5-2.0 x 0.5-2.5 cm, linear, thick, subcylindrical above the sheath. Male and female spikes separated by a considerable interval which is upto 30.0 x 0.6-2.3 cm, brown. Male flowers slender and paler than the female ones which are mixed with clavate sterile pistillodes. Nutlets small, ellipsoid, membranous, indehiscent, brown.

Fls. & Frts. : March-October.

Illus. : Backer in Steenis, *op. cit.*; Mahesh. Illus. Fl. Delhi f. 206. 1966; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 763. 1982.

Distrib. : In marshes. Common in all districts.

## CULTIVATED SPECIES :

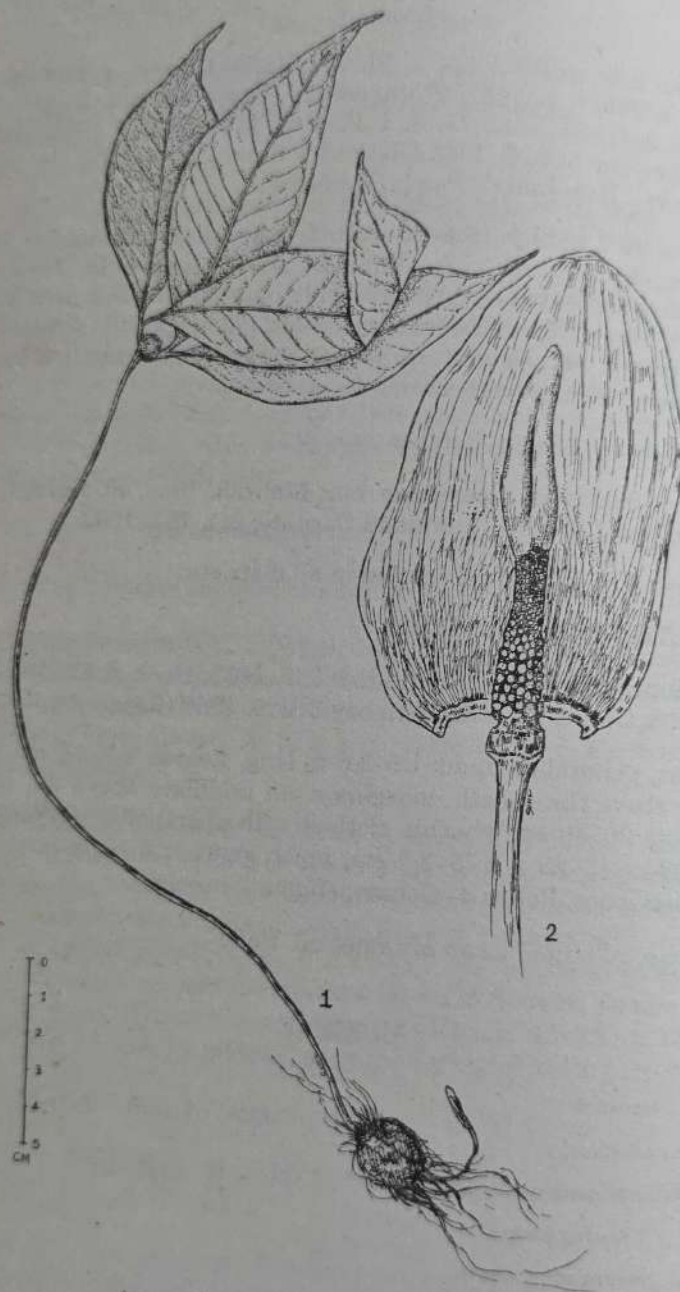
*T. elephantina* Roxb. Fl. Ind. 3: 366. 1832; Hook. f. Fl. Brit. India 6: 489. 1893; Cooke, Fl. Pres. Bombay 3: 326. 1958 (Repr. ed.).

Herbs, perennial; stems 1.8-3.6 m long. Leaves 2.5-3.7 cm broad, trigonous above the sheath, margins often undulate above the middle. Male spikes 20-30 cm, rhachis clothed with short, often forked hairs; female spikes 15-25 x 0.75-2.5 cm, much stouter; flowers mixed with clavate pistillodes. Pollen 4-globate, stigma lanceolate.

Distrib. : Planted as an ornamental. Pune.

## ARACEAE

- |                              |     |              |
|------------------------------|-----|--------------|
| 1. Flowers bisexual          | ... | POTHOS       |
| 1. Flowers unisexual :       |     |              |
| 2. Water or marshy plants :  |     |              |
| 3. Floating plants           | ... | PISTIA       |
| 3. Submerged plants :        |     |              |
| 4. Ovaries in one whorl      | ... | CRYPTOCORYNE |
| 4. Ovaries spirally arranged | ... | LAGENANDRA   |



*Amorphophallus bulbifer* (Roxb.) Bl.  
1. Habit 2. Inflorescence

2. Terrestrial pla  
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## Terrestrial plants :

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| 5. Spadix without a barren appendage :                                    |                    |
| 6. Female inflorescence adnate to the base of the spathe; stigma stellate | ... ARIOPSIS       |
| 6. Spadix free from the spathe; stigma discoid                            | ... REMUSATIA      |
| 5. Spadix with a barren terminal appendage :                              |                    |
| 7. Ovules anatropous or semi-anatropous :                                 |                    |
| 8. Neuters present below the males  | ... SYNANTHERIAS   |
| 8. Neuters absent   | ... AMORPHOPHALLUS |
| 7. Ovules orthotropous :  |                    |
| 9. Male flowers stipitate; flowers often dioecious                        | ... ARISAEMA       |
| 9. Male flowers sessile or nearly so; flowers always monoecious :         |                    |
| 10. Flowers appearing before the leaves                                   | ... SAUROMATUM     |
| 10. Flowers and leaves present together :                                 |                    |
| 11. Ovules 1-2, basal   | ... TYPHONIUM      |
| 11. Ovules many, basal and apical   | ... THERIOPHONUM   |

AMORPHOPHALLUS Bl. ex Decne. (*nom.cons.*)

- |  |   |
|--|---|
| 1. Styles many times longer than the ovary | ... <i>A. paeoniifolius</i><br>var. <i>campanulatus</i> |
| 1. Styles very short or absent :           |   |
| 2. Leaves bulbiferous                      | ... <i>A. bulbifer</i>                                  |
| 2. Leaves not bulbiferous                  | ... <i>A. commutatus</i>                                |

**Amorphophallus bulbifer** (Roxb.) Bl. Rumph. 1:148. 1835; Hook.f. Fl. Brit. India 6: 515. 1893; Cooke, Fl. Pres. Bombay 3: 336. 1958 (Repr.ed.); Blatt. in J. Bombay nat. Hist. Soc. 35: 27. 1931. *Arum bulbiferum* Roxb. Fl. Ind. 3: 510. 1832.

Tubers globose, 5-10 cm in diam. Leaves 30-45 cm in diam.; petiole 90-120 cm long, spotted; leaflets 7.5-20.0 cm long, obovate or lanceolate with purple edges. Peduncles 20-30 cm long. Spathes 12.5-20.0 cm long, pale pink or yellowish shaded with pink, rose-pink inside. Spadix sessile. Male inflorescence up to 3.7 cm long; female inflorescence 2-5 cm long.

*Fls.* : April-June.

*Distrib.* : Occasional along margins of forests. Bombay; Pune; Sindhudurg; Thane.

*Notes* : Cooke (*op. cit.*) included it on the authority of Graham and Woodrow, and he had not seen any specimen from Bombay Presidency. Blatter & McCann (1931) reported it from Maharashtra, S. M. Country and N. Kanara.

**A. commutatus** (Schott) Engl. in DC. Monogr. Phan. 2: 319. 1879 & Pflanzenr. 4, 23C, 48: 95. 1911; Hook. f. Fl. Brit. India 6: 515. 1893; Cooke, Fl. Pres. Bombay 3: 337. 1958 (Repr.ed.); Blatt. in J. Bombay nat. Hist. Soc. 35: 27, t. 7. 1931. *Conophallus commutatus* Schott in Bonplandia 7: 28. 1859. 'Shevla'.

Annuals, tubers c 10 x 5 cm, oblate-spherical, depressed above. Leaves solitary, c 60 cm when expanded, 3-sect; petiole up to 60 cm long, 2 cm in diam.; leaflets: 1 terminal, c 11.2 x 5.0 cm, 2 decurrent on each side and 2 below the bifurcation, reducing in size downwards. Peduncles 30-90 cm long. Spathes thick, 15-25 x 5.0-12.5 cm, brownish-purple outside, pinkish-purple inside. Spadices sessile. Male inflorescence 2.5-5.0 cm long; female inflorescence: stigma orange-red. Berries ripen orange.

*Fls. & Frts.* : April-October.

*Illus.* : Blatt. *op. cit.*

*Distrib.* : Akola; Bombay; Kolhapur; Nasik; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

**A. paeoniifolius** (Dennst.) Nicols. var. **campanulatus** (Decne.) Sivadasan in Taxon 32: 130. 1983. *A. campanulatus* Decne. in Nouv. Ann. Mus. Hist. Paris 3: 366. 1834; Hook. f. Fl. Brit. India 6: 513. 1893; Cooke, Fl. Pres. Bombay 3: 336. 1958 (Repr. ed.); Blatt. in J. Bombay nat. Hist. Soc. 35: 26, t. 5 & t. 6. 1931. 'Suran'.

Tubers depressed-globose, 20-25 cm in diam., dark brown. Leaves 30-90 cm broad; segments spreading, simple or forked; petioles 60-90 cm long, stout; leaflets 5.0-12.5 cm long, obovate or oblong, acute. Peduncles short, stout, elongating in fruit. Spathes campanulate, 15-25 cm broad, greenish-pink externally with pale ocellated blotches, base purple within. Spadices as long as spathes. Male inflorescence sub-turbinate, c 7.5 cm long, 2.5-5.0 cm in diam.; female inflorescence c 7.5 cm long or more, up to 6.2 cm in diam. Berries red, 2-3-seeded, obovoid.

*Fls. & Frts.* : June-September.

*Illus.* : Blatt. *op. cit.*

*Distrib.* : Amaravati; Bombay; Nagpur; Pune, Raigad; Satara; Sindhudurg; Thane.

**Ariopsis**  
Hook. f. Fl. Brit.  
1958 (Repr. ed.).

Herbs, c 1 m  
Leaves solitary,  
shallowly cordate,  
slender. Peduncles  
incurved, violet  
than the spathe  
green. Berries

*Fls. & Frts.*

*Illus.* : Ratnagiri; Satara  
1832.

*Distrib.*  
Ratnagiri; Satara

1. Leaves peduncled
1. Leaflets with
2. Leaflets
2. Leaflets
3. ...
3. ...

**Arisaema**  
Hook. f. Fl. Brit.  
1958 (Repr. ed.)  
Rolla Rao  
*A. longicaule*  
in J. Bombay

Tube  
side of the  
12.5-22.0  
or oblong

## ARIOPSIS Nimmo

*Ariopsis peltata* Nimmo in Grah. Cat. Pl. Bombay 252. 1839; Hook. f. Fl. Brit. India 6: 519. 1893; Cooke, Fl. Pres. Bombay 3: 338. 1958 (Repr. ed.). 'Kadaktiriri'.

Herbs, c 18 cm high; tubers 2–4 cm in diam., subglobose or ovoid. Leaves solitary, 2.5–15.0 cm in diam., membranous, peltate, orbicular or shallowly cordate, tip rounded or acute; petioles 7.5–20.0 cm long, slender. Peduncles 3.7–10.0 cm long. Spathes 1.2–2.3 x 1.0–1.2 cm, incurved, violet with a green dorsal ridge, paler within. Spadix shorter than the spathe, decurved. Male flowers dark purple; female flowers green. Berries 3–6-angled, ovoid.

Fls. & Frts. : June–September.

Illus. : *Remusatia vivipara sensu* Wight, Ic. t. 900. 1847 non Schott 1832.

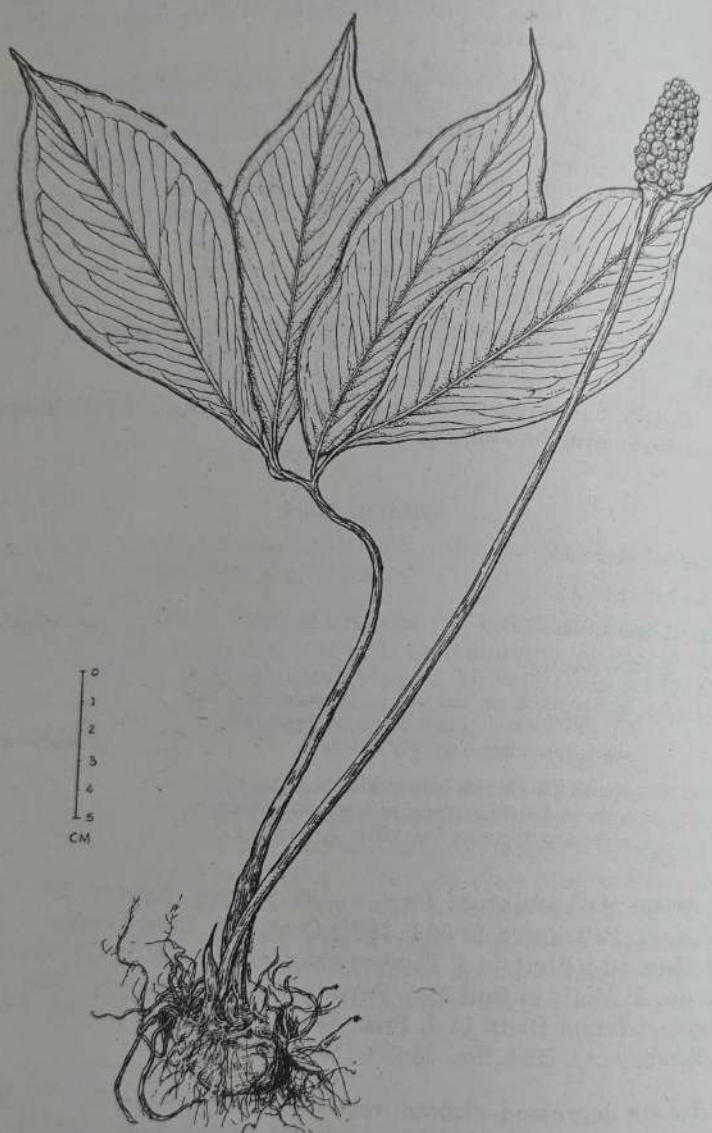
Distrib. : Amaravati; Bombay; Kolhapur; Nasik; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

## ARISAEMA Mart.

- |   |     |                         |
|---|-----|-------------------------|
| 1. Leaves pedatisect  | ... | <i>A. tortuosum</i>     |
| 1. Leaflets whorled :   | ... | <i>A. caudatum</i>      |
| 2. Leaflets petiolate   |     |                         |
| 2. Leaflets sessile :   |     |                         |
| 3. Spathe 10–30 cm long with an obtusely acuminate tip; tube narrow; petiole 60 cm long; peduncle short; appendage narrowly clavate           | ... | <i>A. leschenaultii</i> |
| 3. Spathe 7.5–12.5 cm long with an acute tip; tube wide; petiole 30 cm long; peduncle 30 cm long; appendage tapering from the base to the tip | ... | <i>A. murrayi</i>       |

*Arisaema caudatum* Engl. in DC. Monogr. Phan. 2: 559. 1879; Hook. f. Fl. Brit. India 6: 508. 1893; Cooke, Fl. Pres. Bombay 3: 333. 1958 (Repr. ed.); Blatt. in J. Bombay nat. Hist. Soc. 35: 19. 1931, emend. Rolla Rao & Ahuja in Bull. Bot. Surv. India 11: 450, f. 1–5. (1969) 1972. *A. longicaudatum* Blatt. in J. Proc. Asiat. Soc. Bengal 26: 365. 1921 & in J. Bombay nat. Hist. Soc. 35: 20, t. 3(2). 1931.

Tubers depressed-globose; root-fibres numerous, from the upper side of the tuber. Leaf solitary, peltate; petiole stout; leaflets 6–7, 12.5–22.0 x 5–9 cm, oblong-elliptic, obovate-cuneate, broadly lanceolate or oblong-lanceolate, caudate-acuminate. Peduncles upto 40 cm long.



*Arisaema murrayi* (Grah.) Hook.

Male spathes up to 3  
externally with white;  
to 45 cm long; female  
female flower some ne

Fls. & Frts. : Jun

Illus. : Blatt. op.

Distrib. : Pune;

Notes : Cooke  
description was bas  
Later, collections h  
and critically exam  
concluded that A.  
species.

*A. leschenau*  
504. 1893; Cooke  
Malhotra & Baloo  
J. Bombay nat.  
Linn. Soc. 18: 25

Monoecious  
from the upper  
and banded wi  
lanceolate, cau  
striped externa  
long. Berry 2-3

Fls. & Fr

Illus. : M

Distrib.  
op. cit.); Sind

*A. mur*  
Brit. India (C  
ed.). *Arum*  
'Sapacha-k

Tubers  
divided to  
7.5-15.0 x  
more than  
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Male spathes up to 30 cm long, grass-green throughout, striped externally with white; male spadix up to 9 cm long. Female spathes up to 45 cm long; female spadix: flower-bearing part c 5.5 cm long, above female flower some neuters for 0.5 cm, appendix 4 cm long like male.

*Fls. & Frts.* : June- September.

*Illus.* : Blatt. *op. cit.*; Rolla Rao & Ahuja, *op. cit.*

*Distrib.* : Pune; Ratnagiri; Satara.

*Notes* : Cooke (*op. cit.*) has not seen any specimen and his description was based on that of J.D. Hooker's Flora of British India. Later, collections have been made from Mahabaleshwar, Maharashtra and critically examined by Rolla Rao & Ahuja (*op. cit.*). They have concluded that *A. longicaudatum* Blatt. is also conspecific with this species.

*A. leschenaultii* Bl. Rumph. 1: 93. 1836; Hook. f. Fl. Brit. India 6: 504. 1893; Cooke, Fl. Pres. Bombay 3: 332. 1958 (Repr. ed.); C.L. Malhotra & Balodi in J. Econ. Tax. Bot. 7: 585. 1986; Bole & Almeida in J. Bombay nat. Hist. Soc. 83: 596. 1986. *A. pulchrum* N.E. Br. in J. Linn. Soc. 18: 252, t. 6. 1880; Hook. f. *op. cit.*

Monoecious or dioecious; tubers c 5 cm in diam., globose; roots from the upperside of the tuber. Leaf solitary; petiole usually mottled and banded with red and brown; leaflets 5-11, 10-15 x 3.7-6.2 cm, lanceolate, caudate-acuminate, base tapering. Spathes dark green, striped externally with purple. Spadix shorter than the spathe, c 7.5 cm long. Berry 2-3-seeded.

*Fls. & Frts.* : June-November.

*Illus.* : Matthew, *Illus. Fl. Tamilnadu Carnatic* 2: t. 765. 1982.

*Distrib.* : Rare along margins of forests. Satara (Bole & Almeida, *op. cit.*); Sindhudurg (S. M. Almeida, *Fl. Savantwadi* 2: 54. 1990).

*A. murrayi* (Grah.) Hook. Bot. Mag. t. 4388. 1848; Hook. f. Fl. Brit. India 6: 507. 1893; Cooke, Fl. Pres. Bombay 3: 332. 1953 (Repr. ed.). *Arum murrayi* Grah. Cat. Bombay Pl. 229. 1839. 'Badadha', 'Sapacha-kanda'.

Tubers with root-fibres from the upper side. Leaf solitary, peltate, divided to the base into 5-10 ovate-lanceolate, acuminate segments, 7.5-15.0 x 2.5-5.0 cm. Spathes striate, green at base, forming a tube for more than 1/3 its length. Spadix narrowed from base upwards. Male flowers scattered with a few neuters above them. Ovaries numerous, crowded, ripens bright red, variously compressed. Heads in fruit conical

*Fls. & Frts.* : June–October.

*Distrib.* : Akola; Amaravati; Bombay; Kolhapur; Nasik; Pune; Raigad; Satara; Thane.

**A. tortuosum** (Wall.) Schott in Schott & Endl. Meletem. Bot. 1: 17. 1832; Hook. f. Fl. Brit. India 6: 502. 1893; Cooke, Fl. Pres. Bombay 3: 331. 1958 (Repr. ed.); Blatt. in J. Bombay nat. Hist. Soc. 35: 21. 1931. *Arum tortuosum* Wall. Pl. As. Rar. 2: 10, t. 114. 1830. *Arisaema neglectum* Schott in Bonplandia 7: 26. 1859; Hook. f. *op. cit.* 504; Blatt. *op. cit.* 'Sardacha-jad'.

Herbs, reaching 90 cm high; tubers up to 10 cm in diam., spheroid. Leaves 2–3; petioles 30–90 cm long; leaflets sessile or petiolate, 10–20 cm long, ovate-lanceolate or linear-lanceolate, subcaudately acuminate, distant or crowded or almost radiately arranged. Peduncles 60–120 cm long. Spathes 10–15 cm long, green without; tube pale-purplish within. Male flowers stalked; appendage very long. Ovaries ovoid. Berries 4–5-seeded, c 1.0 x 0.5 cm.

*Fls. & Frts.* : May–September.

*Illus.* : Wight, Ic. t. 788. 1844; Fyson, Fl. Nilgiri Pulney Hill tops 2: t. 270. 1915 (Repr. ed. 1974); Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 619. 1888.

*Distrib.* : Ahmednagar; Bombay; Kolhapur; Nasik; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

#### CRYPTOCORYNE Fischer ex Wydler

- |  |     |                         |
|--|-----|-------------------------|
| 1. Upper tube of spathe almost absent or much shorter than the lower tube  | ... | <i>C. spiralis</i>      |
| 1. Upper tube of spathe present :  |     |                         |
| 2. Lower tube of spathe narrower than the upper tube and several times shorter   | ... | <i>C. ciliata</i>       |
| 2. Lower tube of spathe slightly wider, below the upper tube more or less constricted :  |     |                         |
| 3. Leaves broadly lanceolate-acuminate   | ... | <i>C. cognatoides</i>   |
| 3. Leaves lanceolate to linear-lanceolate, acute at the apex, gradually narrowed into the petiole :                              |     |                         |
| 4. Blade of spathe long, linear-lanceolate, spirally twisted along the whole length  | ... | <i>C. retrospiralis</i> |
| 4. Blade of spathe ovate-lanceolate, constricted in to a long subulate tail; tube of spathe shorter than the long caudate lamina | ... | <i>C. cognata</i>       |

**Cryptocoryne**  
428. 1830; Hook. f. Fl. Brit. India 6: 502. 1893; Cooke, Fl. Pres. Bombay 3: 331. 1958 (Repr. ed.); Blatt. in J. Bombay nat. Hist. Soc. 35: 21. 1931. *Arum tortuosum* Wall. Pl. As. Rar. 2: 10, t. 114. 1830. *Arisaema neglectum* Schott in Bonplandia 7: 26. 1859; Hook. f. *op. cit.* 504; Blatt. *op. cit.* 'Sardacha-jad'.

Herbs, stoloniferous. Leaves linear-lanceolate to linear-lanceolate, subcaudately acuminate, distant or crowded or almost radiately arranged. Peduncles 60–120 cm long. Spathes 10–15 cm long, green without; tube pale-purplish within. Male flowers stalked; appendage very long. Ovaries ovoid. Berries 4–5-seeded, c 1.0 x 0.5 cm.

*Illus.* : Wight, Ic. t. 788. 1844; Fyson, Fl. Nilgiri Pulney Hill tops 2: t. 270. 1915 (Repr. ed. 1974); Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 619. 1888.

*Distrib.* : Ahmednagar; Bombay; Kolhapur; Nasik; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

**C. cognata**  
India 6: 494. 1893; Cooke, Fl. Pres. Bombay 3: 331. 1958 (Repr. ed.); Blatt. in J. Bombay nat. Hist. Soc. 35: 21. 1931. *Arum tortuosum* Wall. Pl. As. Rar. 2: 10, t. 114. 1830. *Arisaema neglectum* Schott in Bonplandia 7: 26. 1859; Hook. f. *op. cit.* 504; Blatt. *op. cit.* 'Sardacha-jad'.

Roots bulbous. Leaves linear-lanceolate to linear-lanceolate, subcaudately acuminate, distant or crowded or almost radiately arranged. Peduncles 60–120 cm long. Spathes 10–15 cm long, green without; tube pale-purplish within. Male flowers stalked; appendage very long. Ovaries ovoid. Berries 4–5-seeded, c 1.0 x 0.5 cm.

*Fls.* : May–September.

*Distrib.* : Ahmednagar; Bombay; Kolhapur; Nasik; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

**C. cognata**  
t. 2. 1931. 1931. *Arum tortuosum* Wall. Pl. As. Rar. 2: 10, t. 114. 1830. *Arisaema neglectum* Schott in Bonplandia 7: 26. 1859; Hook. f. *op. cit.* 504; Blatt. *op. cit.* 'Sardacha-jad'.

Herbs, stoloniferous. Leaves linear-lanceolate to linear-lanceolate, subcaudately acuminate, distant or crowded or almost radiately arranged. Peduncles 60–120 cm long. Spathes 10–15 cm long, green without; tube pale-purplish within. Male flowers stalked; appendage very long. Ovaries ovoid. Berries 4–5-seeded, c 1.0 x 0.5 cm.

*Fls.* : May–September.

*Illus.* : Wight, Ic. t. 788. 1844; Fyson, Fl. Nilgiri Pulney Hill tops 2: t. 270. 1915 (Repr. ed. 1974); Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 619. 1888.

*Distrib.* : Ahmednagar; Bombay; Kolhapur; Nasik; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

No.

**C. cognata**  
Brit. India 6: 494. 1893; Cooke, Fl. Pres. Bombay 3: 331. 1958 (Repr. ed.); Blatt. in J. Bombay nat. Hist. Soc. 35: 21. 1931. *Arum tortuosum* Wall. Pl. As. Rar. 2: 10, t. 114. 1830. *Arisaema neglectum* Schott in Bonplandia 7: 26. 1859; Hook. f. *op. cit.* 504; Blatt. *op. cit.* 'Sardacha-jad'.

**Cryptocoryne ciliata** (Roxb.) Fischer ex Wydler in Linnaea 5: 428. 1830; Hook. f. Fl. Brit. India 6: 492. 1893; Blatt. in J. Bombay nat. Hist. Soc. 35: 17. 1931. *Ambrosia ciliata* Roxb. Pl. Cor. 7: 90, t. 294. 1820.

Herbs, stoloniferous. Leaves 15–35 x 2–9 cm, oblong-lanceolate or linear-lanceolate, apex acute or acuminate, base oblique. Female inflorescence 5–7-gynous, c 1 cm long. Syncarpium 3–4 cm wide, ovoid-globose, 5–7 sulcate and with 5–7 remnants of the styles, valvately dehiscing, cells 3–8-seeded.

Illus. : Wight, Ic. t. 775. 1844.

Distrib. : Western Ghats (Blatt. op. cit.).

**C. cognata** Schott in Bonplandia 5: 222. 1857; Hook. f. Fl. Brit. India 6: 494. 1893; Cooke, Fl. Pres. Bombay 3: 329. 1958 (Repr. ed.).

Roots bulbous, with vermiform fibres. Leaves 15–25 x 2.3–3.7 cm, margins undulate, midrib very broad; petioles stout, shorter than or equalling the blade. Spathe reaching c 17.5 cm long, shortly pedunculate; tube of spather reaching c 5 cm long. Male inflorescence separated from the female by an interspace of c 3 cm.

Fls. : September–October.

Distrib. : Rare on sides of a lake. Sindhudurg (S.M. Almeida, Fl. Savantwadi 2: 54. 1990).

**C. cognatoides** Blatt. & McC. in J. Bombay nat. Hist. Soc. 35: 17, t. 2. 1931. *C. spiralis* var. *cognatoides* (Blatt. & McC.) Yadav, Patil & Bogner in Aqua-Planta 2: 65. 1993.

Herbs, rhizomatous; roots thick, cylindrical. Leaves c 8.0 x 2.5–4.5 cm, margins undulate; petioles 9–15 cm long. Spathes 10–14 cm long, linear-lanceolate; spadix c 4.2 cm long. Male flowers in cone-like clump at the top and female flowers grouped at base, separated by c 2.5 cm long interspace.

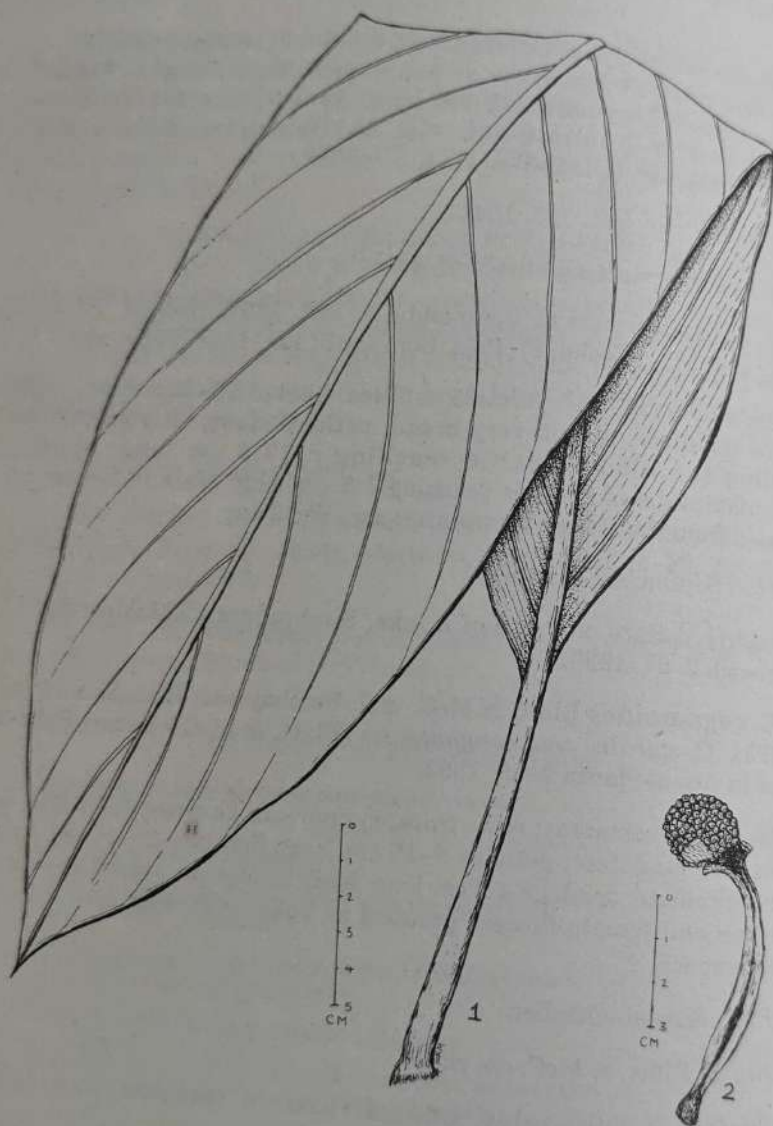
Fls. : August–October.

Illus. : Blatt. & McC. op. cit.

Distrib. : Vulnerable, amidst rocks in streams. Ratnagiri; Sindhudurg.

Notes : Endemic to Maharashtra.

**C. retrospiralis** (Roxb.) Kunth, Enum. Pl. 3: 12. 1841; Hook. f. Fl. Brit. India 6: 493. 1893; Cooke, Fl. Pres. Bombay 3: 329. 1958 (Repr. ed.).



*Lagenandra ovata* (L.) Thw.  
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3: 492. 1832  
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ed.); Subr. Aquat. Ang. 76. 1962. *Ambrosinia retrospiralis* Roxb. Fl. Ind. 3: 492. 1832. *Cryptocoryne dalzellii* Schott in Bonplandia 5: 221. 1857; Hook. f. op. cit. 495; Cooke, op. cit. 330. *C. unilocularis* Wight, Ic. t. 774. 1844; Cooke, op. cit. *C. roxburghii* Schott, Prodr. Syn. Aroid. 18. 1860; Hook. f. op. cit. 494.

Herbs; roots fleshy, fibrous. Leaves radical, 7.5–45.0 x 0.6–2.0 cm, sessile or with a short stout petiole, midrib slender. Spathes subsessile, nearly as long as the leaves, deep green, streaked with purple. Male and female flowers separated by naked rhachis. Fruits c 1.2 x 0.8 cm, ovoid, on a solitary stalk. Seeds 2-seriate, oblong, subtrigonal.

Fls. & Frts. : October–February.

Illus. : Wight, op. cit.; Subr. op. cit. 162, f. 50; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 767. 1982.

Distrib. : Submerged herb along the margins of tanks. Bombay; Jalgaon; Kolhapur; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

*C. spiralis* (Retz.) Fischer ex Wydler in Linnaea 5: 428. 1830; Hook. f. Fl. Brit. India 6: 494. 1893; Cooke, Fl. Pres. Bombay 3: 329. 1958 (Repr. ed.). *Arum spirale* Retz. Obs. Bot. 1: 30. 1779. *Cryptocoryne huegelii* Schott, Aroid. 8, t. 12. 1853; Hook. f. op. cit.; Blatt. in J. Bombay nat. Hist. Soc. 35: 14. 1931. *C. tortuosa* Blatt. & McC. in J. Bombay nat. Hist. Soc. 35: 15, t. 1. 1931.

Herbs; rootstock tuberous, soboliferous; roots vermiform. Leaves 7.5–20.0 x 0.75–1.75 cm, linear-lanceolate, acute or acuminate, narrowed from middle to both ends; petiole short, stout. Spathes subsessile, 7.5–12.5 cm long, linear-lanceolate, greenish outside, dark purple and transversely lamellate within. Fruits subglobose. Seeds c 0.5 cm long, spindle shaped, irregularly verrucose-rugose.

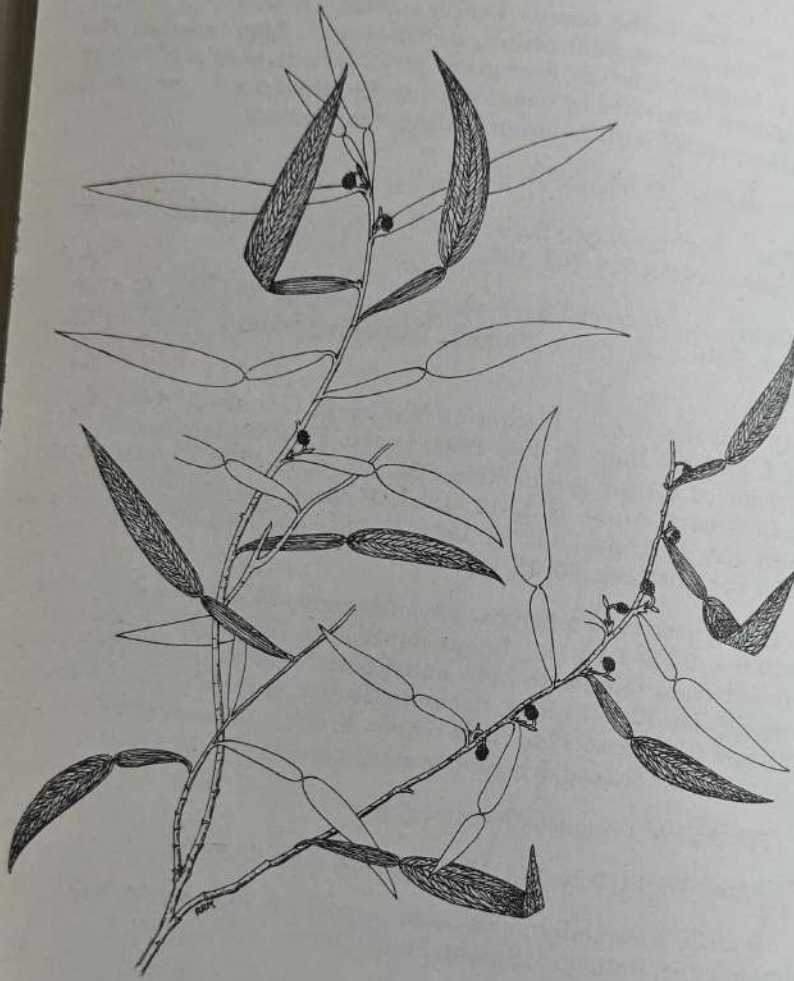
Fls. & Frts. : August–December.

Illus. : Wight, Ic. t. 773. 1844; Blatt. & McC. op. cit.

Distrib. : Partially submerged in pools or in margins of ponds. Jalgaon; Pune; Ratnagiri; Satara; Sindhudurg.

#### LAGENANDRA Dalz.

*Lagenandra ovata* (L.) Thw. Enum. Pl. Zeyl. 334. 1864; Blatt. in J. Bombay nat. Hist. Soc. 35: 18. 1931; Nicols. in Sald. & Nicols. Fl. Hassan Dt. 787. 1976. *Arum ovatum* L. Sp. Pl. 967. 1753. *Lagenandra*

*Pothos scandens* L.

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*toxicaria* Dalz. in Hook. J. Bot. Kew Gard. Misc. 4: 289. 1852 & 5: t. 4. 1853; Hook. f. Fl. Brit. India 6: 495. 1893; Cooke, Fl. Pres. Bombay 3: 330. 1958 (Repr. ed.). 'Vatsanab'.

Rootstocks reaching c 5 cm thick, creeping, simple; root-fibres vermiform. Leaves 15.0–37.5 x 5.0–12.5 cm, elliptic-oblong, obtuse or acute, margins undulate, entire, base acute or rounded; petiole as long as the lamina. Peduncles shorter and more slender than the petiole. Spathes 7.5–22.5 cm long. Male inflorescence cylindric; female inflorescence of many ovaries. Syncarpium on a short decurved peduncle, globose 3.7–5.0 cm in diam.; carpels c 0.75 cm long, partially dehiscent. Seeds narrowly oblong, furrowed.

*Fls. & Frts.* : February–May.

*Distrib.* : In marshy places along the streams. Bombay (Blatt. *op. cit.*); Ratnagiri; Sindhudurg.

PISTIA L.

*Pistia stratiotes* L. Sp. Pl. 963. 1753; Hook. f. Fl. Brit. India 6: 497. 1893; Cooke, Fl. Pres. Bombay 3: 328. 1958 (Repr. ed.); Subr. Aquat. Ang. 75. 1962. 'Brandal', 'Haravel'.

Herbs, stemless, stoloniferous; roots of tufted simple white fibers clothed with fibrillae. Leaves 3–10 cm long, obovate-cuneate, rounded or retuse at apex, densely and closely pubescent on both surfaces. Spathes c 1.3 cm long, white, obliquely campanulate, gibbous and closed below, contracted above the middle, dilated and nearly orbicular above. Fruits membranous, ovoid. Seeds many, oblong or obovoid.

*Fls. & Frts.* : November–January.

*Illus.* : Subr. *op. cit.* 161, f. 49; Matthew, *Illus. Fl. Tamilnadu Carnatic* 2: t. 768. 1982.

*Distrib.* : Common in ponds and tanks. Ahmednagar; Bombay; Chandrapur; Nagpur; Pune; Raigad; Thane; Yavatmal.

POTHOS L.

*Pothos scandens* L. Sp. Pl. 968. 1753; Hook. f. Fl. Brit. India 6: 551. 1893 *p.p.*; Cooke, Fl. Pres. Bombay 3: 339. 1958 (Repr. ed.); Nicols. in Sald. & Nicols. Fl. Hassan Dt. 788. 1976.

Climbers; stems much branched, tough, terete, leafy. Leaves variable, 5–10 x 0.75–5.0 cm, obovate, elliptic or lanceolate, apex acute,

acuminate or apiculate, base cuneate or rounded; petiole broadly winged, 2.5–7.5 x 0.6–1.75 cm. Peduncles 0.5–1.0 cm long. Spathes 0.43–0.6 cm long, cymbiform, cuspidate, green. Spadix yellow, as long as the spathe, globose, ovoid or shortly oblong. Berries 1.2–1.8 cm long, oblong, scarlet, few ripening.

*Fls. & Frts.* : May–July.

*Distrib.* : Kolhapur; Nagpur; Pune; Raigad; Ratnagiri; Satara (Cooke, *op. cit.*); Sindhudurg.

#### REMUSATIA Schott

*Remusatia vivipara* (Roxb.) Schott & Endl. Meletem. Bot. 18. 1832; Hook. f. Fl. Brit. India 6: 521. 1893; Cooke, Fl. Pres. Bombay 3: 339. 1958 (Repr. ed.). *Arum viviparum* Roxb. Fl. Ind. 3: 496. 1832 ("*viviparium*").

Tubers 2.5–3.7 cm in diam., clustered, depressed, rooting from the crown; bulbiferous shoots 15–30 cm long, simple or shortly branched, bearing at the nodes clusters of oblong, squarrosely scaly bulbils. Leaves peltate, 12.5 x 8.7 to 45 x 30 cm, orbicular-ovate or cordate, acute or acuminate; petiole 15–30 cm long. Spathes 10.0–12.5 cm long; tube 2.5–5.0 cm long, green. Spadix 2.5–3.7 cm long. Male flowers of 2–3 stamens; female flowers of densely packed ovaries; neutral flowers mixed with male. Berries obovoid, minute.

*Fls. & Frts.* : April–September.

*Illus.* : Wight, Ic. t. 798. 1844 (*Arum viviparum*); Nicols. in Sald. & Nicols. Fl. Hassan Dt. 782, f. 117. 1976; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 779. 1982.

*Distrib.* : Kolhapur; Nasik; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

#### SAUROMATUM Schott

*Sauromatum venosum* (Ait.) Schott, Prodr. Aroid. 71. 1860; Nasir in Nasir & Ali, Fl. W. Pak. 120: 14, f. 4. 1978. *Arum venosum* Ait. in Hort. Kew. ed. 10. 3: 315. 1789. *Sauromatum guttatum* (Wall.) Schott in Schott & Endl. Meletem. Bot. 1: 17. 1832; Hook. f. Fl. Brit. India 6: 508. 1893; Cooke, Fl. Pres. Bombay 3: 335. 1958 (Repr. ed.); Blatt. in J. Bombay nat. Hist. Soc. 35: 25. 1931. *S. pedatum* (Willd.) Schott in Schott & Endl. *op. cit.*; Nicols. in Sald. & Nicols. Fl. Hassan Dt. 789. 1976. 'Nurki'.

Tubers large. Leaf pedatisect, 15–30 cm broad; segments 7–15, variable, 5.0–37.5 x 2.5–7.5 cm, elliptic, acuminate; petiole stout, 30–45 cm long. Peduncle rather short, stout. Spathe 30–70 cm long; tube ovoid or subglobose. Male inflorescence c 1.2 cm long, c 7.5 cm above the female; female inflorescence c 1.2 cm long; neuters c 1.2 cm long, spreading, close above the female. Berries ob-pyramidal, 1-seeded. Seeds c 0.18 cm broad, ovoid.

*Fls. & Frts.* : March–May.

*Illus.* : Wight, Ic. t. 800. 1844 (*Arum sessiliflorum* Roxb. Fl. Ind. 3: 507. 1832); Nasir in Nasir & Ali, *op. cit.*

*Distrib.* : Akola; Amaravati; Bombay; Buldhana; Dhule; Pune; Raigad; Satara; Sindhudurg; Thane; Yavatmal.

#### SYNANTHERIAS Schott

*Synantherias sylvatica* Schott, Gen. Aroid. t. 28. 1858; Hook. f. Fl. Brit. India 6: 518. 1893; Cooke, Fl. Pres. Bombay 3: 340. 1958 (Repr. ed.); McC. in J. Bombay nat. Hist. Soc. 42: 796, t. 1. 1941. *Amorphophallus sylvaticus* (Roxb.) Kunth, Enum. Pl. 3: 34. 1841; Blatt. in J. Bombay nat. Hist. Soc. 35: 28. 1931.

Herbs, c 75 cm high; tubers 2.5–6.2 cm in diam., depressed-globose, bulbiferous. Leaves 45–75 cm in diam.; petiole 30–60 cm long; leaflets few, ovate-lanceolate or oblanceolate. Peduncles 55 cm long. Spathes 2.5–8.6 x 3.6 cm, pale pink spotted with green, purple within towards the base. Spadix c 30.5 cm long. Male flowers purplish; female flowers at first creamy, the ovaries passing to green, the stigma yellow. Fruits at first dark green, then turning scarlet.

*Fls. & Frts.* : May–September.

*Illus.* : Wight, Ic. t. 802. 1844 (*Arum sylvaticum* Roxb. Fl. Ind. 3: 511. 1832); McC. *op. cit.*

*Distrib.* : Rare. Bombay (McC. *op. cit.*); Ratnagiri; Sindhudurg; Yavatmal.

*Notes* : Cooke (*op. cit.*) could not find any satisfactory evidence of this as a Bombay plant and hence he excluded it. Later, McCann (1941) collected it from Bhandup, Salsette Island, Bombay. Afterwards it was not collected from Maharashtra. After a lapse of about 38 years, it has been located in the north-eastern part of Maharashtra, where it appears to be quite common. (Karthikeyan & Anand Kumar in J. Bombay nat. Hist. Soc. 30: 255. 1983).

## THERIOPHONUM BL.

1. Spadix with sterile flowers above and below the staminate flowers ... *T. minutum*  
 1. Spadix with sterile flowers only below the staminate flowers ... *T. dalzellii*

**Theriophonum dalzellii** Schott, Aroid. 15. 1853; Hook. f. Fl. Brit. India 6: 513. 1893; Cooke, Fl. Pres. Bombay 3: 334. 1958 (Repr. ed.); Sivadasan & Nicols. in Kew Bull. 37: 278. 1982. *T. indicum* Engl. Pflanzenr. 4, 23, 73: 107. 1920; McC. in J. Bombay nat. Hist. Soc. 42: 799, t. 4. 1941. *T. uniseriatum* Blatt. & McC. in J. Bombay nat. Hist. Soc. 35: 25. 1931.

Herbs, small, perennial; corms globose. Leaves 8–20 x 4.0–7.5 cm, ovate-lanceolate, elliptic, oblong or linear, apex acute or subobtuse, base rounded or hastate, or sagittate; petiole 10–25 cm long. Peduncles stout, 7.5–15.0 cm long. Spathes 10.0–17.5 cm long, oblong-lanceolate. Spadix 9–12 cm long. Male and female flowers separated by naked rhachis, female flowers at base and male flowers in cylindrical mass. Fruits ovoid-oblong, angular, 4–5-seeded.

*Fls. & Frts.* : June–September.

*Illus.* : McC. *op. cit.*; Sivadasan & Nicols. *op. cit.* 280, f. 1E.

*Distrib.* : Bombay; Nagpur; Ratnagiri; Sindhudurg; Thane.

**T. minutum** (Willd.). Baill. Hist. Pl. 13: 457. 1895; Blatt. in J. Bombay nat. Hist. Soc. 35: 24. 1931; Sivadasan & Nicols. in Kew Bull. 37: 285. 1982. *Arum minutum* Willd. Sp. Pl. 4: 481. 1805 *excl.* Rheede's Illustr. cited; Grah. Cat. Bombay Pl. 228. 1839. *Theriophonum crenatum* (Willd.) Bl. Rumph. 1: 128. 1837; Hook. f. Fl. Brit. India 6: 512. 1893. *T. zeylanicum* N. E. Br. in J. Linn. Soc. Bot. 18: 238. 1881; Hook. f. *op. cit.* 513. *T. minutum* var. *heynei* Engl. in DC. Monogr. Phan. 2: 607. 1879; Blatt. *op. cit.* *T. minutum* var. *kleinii* Engl. in DC. *op. cit.*; Blatt. *op. cit.* *T. wightii* Schott in Oestr. Bot. Zeitschr. 3. 1858; Hook. f. *op. cit.*

Herbs, small; tubers 1–2 cm in diam., depressed. Leaves 2–5 cm long, hastate-triangular; petioles 5–25 cm long. Spathe whitish; tube 1–2 cm long, obtuse or subtruncate at base. Female flowers at the base in a single row, green, stigma white; neuter florets above the female, dark brown; male flowers above the neuters, reddish-brown; appendage brown. Berries green, 7–10 on deflexed peduncles, subconical. Seeds usually 2–3, broadly ovoid to obovoid with a white basal tissue.

*Fls. & Frts.* :

*Illus.* : Sivadasan & Nicols. in Kew Bull. 37: 278. 1982. *T. indicum* Engl. Pflanzenr. 4, 23, 73: 107. 1920; McC. in J. Bombay nat. Hist. Soc. 42: 799, t. 4. 1941. *T. uniseriatum* Blatt. & McC. in J. Bombay nat. Hist. Soc. 35: 25. 1931.

*Distrib.* : Sindhudurg; Thane.

*Notes* : Collected by Sivadasan & Nicols. based on the material reported for the past 14 years. & Anand Kurup, Sindhudurg (S).

1. Lower rudimentary

1. Rudimentary

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2. Leaves

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*Fls. & Frts.* : August–October.

*Illus.* : Sivadasan & Nicols. *op. cit.* 280, f. 1. A–B; Matthew, *Illus.*  
Fl. Tamilnadu Carnatic 2: t. 771. 1982.

*Distrib.* : Scattered in shady places. Bombay (Grah. *op. cit.* &  
Blatt. *op. cit.*); Sindhudurg; Yavatmal.

*Notes* : Cooke (1908) did not report this species from erstwhile  
Bombay Presidency, though Graham (*op. cit.*) listed it from S. Concan  
for the past 14 decades from Maharashtra including Concan, until it  
was reported from Yavatmal, where it is quite abundant (Karthikeyan  
& Anand Kumar in *J. Bombay nat. Hist. Soc.* 80: 255.1983) and  
Sindhudurg (S.M. Almeida, Fl. Savantwadi 2: 57. 1990).

#### TYPHONIUM Schott

- |   |     |                         |
|---|-----|-------------------------|
| 1. Lower rudiments of sterile flowers clavate, upper ones<br>subulate or only verruciform | ... | <i>T. flagelliforme</i> |
| 1. Rudiments of sterile flowers never clavate :   |     |                         |
| 2. Leaves bulbiferous at the apex of the petiole  | ... | <i>T. bulbiferum</i>    |
| 2. Leaves not bulbiferous :   |     |                         |
| 3. Appendix of spadix red or red-fulvous, very<br>shortly or scarcely stipitate           | ... | <i>T. trilobatum</i>    |
| 3. Appendix of spadix black-purple, longer stipitate                                      | ... | <i>T. roxburghii</i>    |

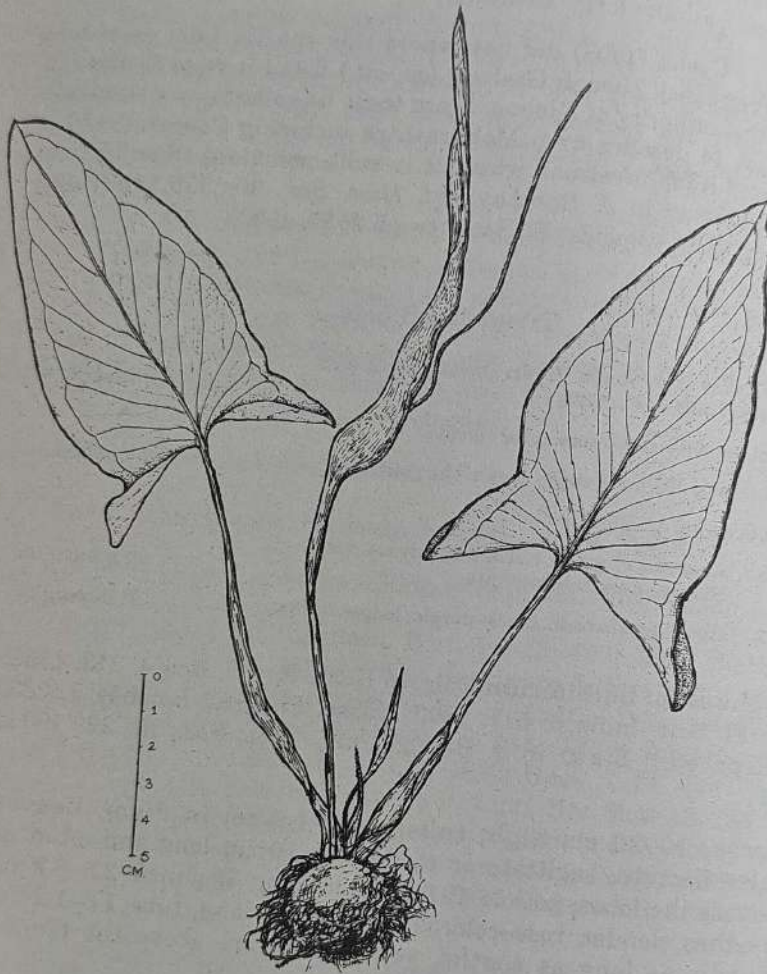
**Typhonium bulbiferum** Dalz. in Hook. Kew J. Bot. 4: 113. 1852;  
Hook. f. Fl. Brit. India 6: 511. 1893; Cooke, Fl. Pres. Bombay 3: 333.  
1958 (Repr. ed.); Blatt. in J. Bombay nat. Hist. Soc. 35: 22. 1931.  
'Rantiri'.

Herbs, 10–20 cm high; tubers 0.5–1.2 cm in diam. Leaves  
triangular-hastate, sagittate or cordate, 5–10 cm long and often as  
broad across the lobes; petiole 12.5–15.0 cm long. Peduncle 2.5–6.2 cm  
long. Spathes slender, rose-colored, 7.5–6.2 cm long; tube 1.0–1.2 cm  
long. Spadix as long as spathe, yellow. Neuters above the female  
inflorescence, yellow.

*Fls.* : June–July.

*Distrib.* : Amaravati; Raigad; Sindhudurg; Thane.

**T. flagelliforme** (Roxb. ex Lodd.) Bl. Rumph. 1: 134. 1837; Blatt.  
in J. Bombay nat. Hist. Soc. 35: 22. 1931. *Arum flagelliforme* Roxb. ex  
Lodd. Bot. Cab. 4: t. 396. 1819. *Typhonium cuspidatum* (Bl.) Decne. in



*Typhonium bulbiferum* Dalz.

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Nouv. Ann. Mus. Paris 3: 39. 1834; Hook. f. Fl. Brit. India 6: 511. 1893; Cooke, Fl. Pres. Bombay 3: 334. 1958 (Repr. ed.). *T. divaricatum sensu* Hook. f. *op. cit.* 510 non Decne. 1834. *T. incurvatum* Blatt. & McC. in J. Bombay nat. Hist. Soc. 35: 22, t. 4. 1931.

Tubers 2-3 cm in diam., depressed-globose. Leaves 5.0-11.2 cm long, of variable breadth, hastately or cordately oblong or lanceolate, acuminate; basal lobes short, subacute; petiole 10-25 cm long. Peduncle slender, long or short. Spathes 10.0-17.5 cm long. Spadix shortly stipitate. Male inflorescence cylindric; female shortly cylindric; neuters above the female inflorescence purple-headed, those above the male white. Fruits oblong-obovoid. Seed solitary, oblong, rugulose.

*Fls. & Frts.* : June-September.

*Illus.* : Wight, Ic. t. 791. 1844 (*Arum flagelliforme*); Blatt. & McC. *op. cit.*

*Distrib.* : A few, along sides of streams. Bombay (Cooke, *op. cit.*); Nagpur; Sindhudurg (S.M. Almeida, Fl. Savantwadi 2: 58. 1990).

***T. roxburghii*** Schott, Aroid. 1: 12. 1855 (*excl. t. 17*); Prain, Bengal Pl. 2: 1106. 1903 [2: 834. 1963 (Repr. ed.)]. *T. mottleyanum* Schott, Prodr. 106. 1860; Hook. f. Fl. Brit. India 6: 510. 1893. *T. amboinense* Blatt. & McC. in J. Bombay nat. Hist. Soc. 35: 23. 1932; McC. *Ibid.* 42: 798, t. 3. 1941.

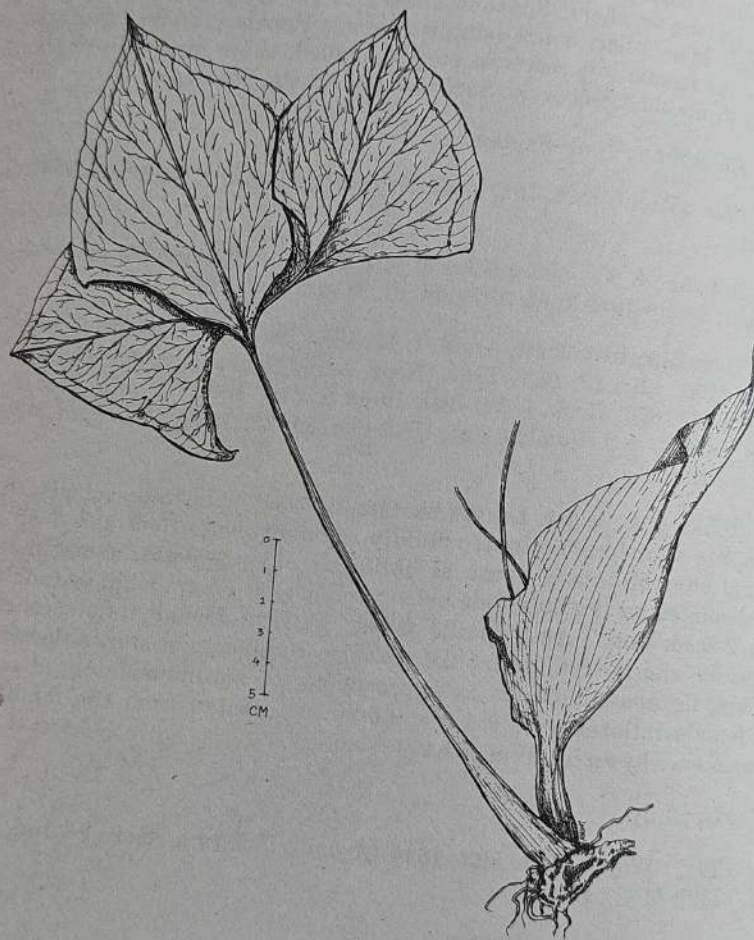
Tubers subglobose. Leaves hastate, 3-lobed or hastate-subtrisect, segments shortly acuminate, middle segment ovate, 5-9 x 3-4 cm, lateral ones obliquely ovate or obliquely oblong-ovate, sometimes lobed-dilated on the outside below; petioles 10-35 cm long; peduncle thin, 2-9 cm long. Tube of spathe oblong, 2 x 1 cm. Female inflorescence of spadix shortly cylindric, c 0.4 cm long, rudiments of sterile flowers filiform, flexuous, c 0.5 cm long, occupying 0.5 cm immediately above the female inflorescence c 1.0 x 0.5 cm, separated from the female inflorescence by an interval of 1.2-1.5 cm.

*Fls.* : July.

*Illus.* : Wight, Ic. t. 803. 1844 (*Arum trilobatum* Roxb. Fl. Ind. 3: 505. 1832); McC. *op. cit.*

*Distrib.* : Bombay; Satara.

***T. trilobatum*** (L.) Schott in Weiner Z. Kunst. 3: 72. 1829; Hook. f. Fl. Brit. India 6: 509. 1893; Blatt. in J. Bombay nat. Hist. Soc. 35: 22. 1931. *Arum trilobatum* L. Sp. Pl. 965. 1753.



*Typhonium trilobatum* (L.) Schott

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Tubers subglobose, up to 4 cm in diam. Leaves hastate-subtrisect, segments all acuminate, front-segment ovate, 8-18 x 5-10 cm, lateral ones obliquely ovate, shorter, sub-bilobed at base; petioles 25-30 cm long. Peduncles thin, 5-7 cm long. Spadix nearly 15 cm long. Female inflorescence short-cylindric, c 0.7 cm long; male inflorescence 1.25-1.5 x 0.5 cm.

*Distrib.* : Bombay (Blatt. *op. cit.*).

#### CULTIVATED SPECIES :

**Acorus calamus** L. Sp. Pl. 324. 1753; Hook. f. Fl. Brit. India 6: 555. 1893; Cooke, Fl. Pres. Bombay 3: 341. 1958 (Repr. ed.); Nasir in Nasir & Ali, Fl. W. Pak. 120: 3, f. 1, A-E. 1978. 'Yakand.'

Herbs, perennial, up to 80 cm tall; rootstock stout, 1.0-1.5 cm broad, creeping with fibrous roots from the lower surface. Leaves 55-100 x 0.8-1.5 cm. Spathes leaf-like, up to 46 cm long. Spadix 5.0-6.5 cm long, cylindrical, 1.0-1.4 cm broad. Flowers densely arranged. Berries ellipsoid. Seeds few, obconical, c 0.2 cm long.

*Fls. & Frts.* : February-June.

*Illus.* : Nasir in Nasir & Ali, *op. cit.*; Matthew, *Illus. Fl. Tamilnadu Carnatic* 2: t 764. 1982.

*Distrib.* : Cultivated. Nasik; Sindhudurg.

**Alocasia macrorhiza** (L.) G. Don in R. Sweet, Hort. Brit. ed. 3: 631. 1839; Hook. f. Fl. Brit. India 6: 526. 1893; Cooke, Fl. Pres. Bombay 3: 341. 1958 (Repr. ed.); Nicols. in Smith, Fl. Vitiensis Nov. 1: 455. 1979. *Arum macrorhizum* L. Sp. Pl. 965. 1753. *Alocasia indica* Spach, Hist. Nat. Veg. Phan. 12: 47. 1846; Hook. f. *op. cit.* 525; Cooke, *op. cit.*; Bole & Almeida in J. Bombay nat. Hist. Soc. 83: 595. 1986.

Herbs stout; rootstock suberect, large, 0.9-4.8 m long, 7.5-20.0 cm thick with a few soboli. Leaves large, 60-90 cm long, ovate, deeply sagittately cordate; lobes rounded, the sinus narrow; spathes 15-30 cm long, pale yellowish-green, fragrant.

*Illus.* : Wight, Ic. t. 794. 1844 (*Arum indicum* Roxb. Fl. Ind. 3: 498. 1832).

*Distrib.* : Cultivated for its rootstocks which are used as vegetable. Satara.

**Caladium bicolor** (Ait. ex Dryand.) Vent. Descr. Pl. Nouv. t. 30. 1801; Bailey, Man. Cult. Pl. 188. 1949. *Arum bicolor* Ait. ex Dryand. Hort. Kew 3: 316. 1789.

Herbs, 30–45 cm high. Leaves sagittate-ovate, ovate-triangular or round-ovate; petiole elongated, glaucous or pruinose towards top, otherwise green. Spathe with tube green without, whitish-green within, the throat usually purplish, the blade cuspidate, white at apex. Spadix shorter than the leaves. Berry many-seeded. Seeds subovoid with many longitudinal grooves.

*Fls. & Frts.* : July–September.

*Distrib.* : Cultivated in gardens as an ornamental, becoming naturalised. Nagpur; Osmanabad; Satara.

**Colocasia esculenta** (L.) Schott in Schott & Endl. Meletem. Bot. 1:18. 1832. *Arum esculentum* L. Sp. Pl. 965. 1753. *Colocasia antiquorum* Schott in Schott & Endl. *op. cit.*; Hook. f. Fl. Brit. India 6: 523. 1983; Cooke, Fl. Pres. Bombay 3: 340. 1958 (Repr. ed.); Blatt. in J. Bombay nat. Hist. Soc. 35: 29. 1931. 'Alu', 'Chamkara'.

Rootstocks tuberous. Leaves thinly coriaceous, peltate-ovate, cordate at base, up to 50 cm long; petiole erect up to 1.2 m long. Peduncles much shorter than the petiole. Spathe pale yellow, 15–35 cm long; tube greenish, oblong. Spadix much shorter than the spathe, rather slender. Female inflorescence as long as the sterile male inflorescence. Berries oblong, many-seeded.

*Fls. & Frts.* : July–November.

*Illus.* : Mahesh. Illus. Fl. Delhi f. 207. 1966; Matthew, Illus. Fl. Tamilnadu Carnatic 2: tt. 766 & 979 c. 1982.

*Distrib.* : Cultivated. Bombay; Buldhana; Kolhapur; Nagpur; Osmanabad; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane; Yavatmal.

**Dieffenbachia picta** Schott in Oestr. Bot. Wochenbl. 88. 1852; Bailey, Man. Cult. Pl. 182. 1949.

Stems 60–120 cm tall. Leaves oblong to oblong-elliptic or oblong-lanceolate, acuminate-cuspidate at apex, rounded or acute at base, dull green and shining on both sides with many white or yellowish irregular marks and blotches. Spathes narrowly long-cuspidate.

*Distrib.* : It is sometimes cultivated in gardens. Ratnagiri (S.M. Almeida, 1983–86).

**Epipremnum aureum** (Linden ex Andre) Bunting in Ann. Miss. Bot. Gard. 1: 78. 1964; Bole & Almeida in J. Bombay nat. Hist. Soc. 83: 597. 1986. *Pothos aurea* Linden ex Andre in Illustr. Hortic. 27: 69, t. 381. 1880; Cooke, Fl. Pres. Bombay 3: 340. 1958 (Repr.ed).

Plants show  
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Plants showy, branches pendulous, rooting at nodes. Leaves 6–15 x 4–12 cm, ovate or ovate-oblong, cordate, acute, thick, fleshy, strikingly variegated, of a dark green, boldly and irregularly marked by bands of fantastic-shaped blotches of yellow, varying in intensity from cream to orange.

*Distrib.* : Cultivated in gardens as well as indoor, ornamental plant. Ahmednagar; Osmanabad; Satara (Bole & Almeida, *op. cit.*).

**Monstera deliciosa** Liebm. Videnk. Medel. Sansk. Naturalist. Forem. Kyobenhaur 1 & 2: 19. 1849; Bailey, Man. Cult. Pl. 183. 1949; Bole & Almeida in J. Bombay nat. Hist. Soc. 83: 597. 1986.

Climbers, straggling; roots hanging, cord-like. Leaves 60–90 cm long and broad, thick, pinnately cut and much perforated with oblong or elliptic spaces. Spathe white, 30 cm long. Spadix 20–25 cm long, ripening into a large fruit.

*Distrib.* : Rarely cultivated in gardens as an ornamental. Satara (Bole & Almeida, *op. cit.*).

**Rhaphidophora pertusa** (Roxb.) Schott in Bonplandia 5: 45. 1857; Hook. f. Fl. Brit. India 6: 546. 1893; Cooke, Fl. Pres. Bombay 3: 342. 1958 (Repr. ed.); Bole & Almeida in J. Bombay nat. Hist. Soc. 83: 597. 1986. *Pothos pertusa* Roxb. Fl. Ind. 1: 455. 1832.

Climbers, lofty; stems cylindric, stout, 2.5–3.5 cm in diam. Leaves 20–45 x 15–25 cm, broadly ovate, apex cuspidate, base slightly cordate or subtruncate; petioles deeply channelled above, 15–30 cm long. Spathes fleshy, yellow, ovate-oblong, 10 cm or more long. Spadix sessile, cylindrical, 8.0–9.5 x 1.5 cm. Berries many-seeded. Seeds oblong to reniform.

*Fls. & Frts.* : January–March.

*Illus.* : Wight, Ic. t. 781. 1844 (*Scindapsus pertusus* Schott in Schott & Endl. Meletem. 21. 1832); Matthew, Illus. Fl. Tamilnadu Carnatic 2: tt. 769 & 979d. 1982.

*Distrib.* : Rarely cultivated in gardens as an ornamental. Satara (Bole & Almeida, *op. cit.*); Sindhudurg (S.M. Almeida, Fl. Savantwadi 2: 58. 1990).

**Zantedeschia aethiopica** (L.) Spr. Syst. Veg. ed. 16, 3: 765. 1826; Bole & Almeida in J. Bombay nat. Hist. Soc. 83: 597. 1986. *Calla aethiopica* L. Sp. Pl. 968. 1753.

Herbs, perennial, rhizomatous, up to 1 m tall with watery sap. Leaves radical, cordate-sagittate, up to 35 x 15 cm, apex cuspidate.

Spathe showy, up to 15 x 13 cm. Spadix 6-8 cm long, cylindrical; the lower one-fourth covered with pistillate and the upper three-fourths with staminate flowers. Berry ovoid, 1.0-1.2 cm across. Seeds subglobose, c 0.3 cm across.

*Fls. & Frts.* : September.

*Distrib.* : Usually cultivated along the hills, rarely found as an escape in moist situations. Satara.

*Notes* : A native of S. Africa.

### LEMNACEAE

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|---|-----|-----------|
| 1. Roots absent; plants minute, subglobose with a single marginal reproductive pouch; inflorescence of 1 staminate and 1 carpellate flowers without a spathe and borne on the upper surface | ... | WOLFFIA   |
| 1. Roots present; fronds flat above with 2 marginal reproductive pouches; inflorescence of 2 staminate and 1 carpellate flowers surrounded by a membranous spathe :                         |     |           |
| 2. Fronds with 2 or more roots, conspicuously 5-18-nerved, with a dorsal and ventral scale  | ... | SPIRODELA |
| 2. Fronds bearing a single root, obscurely 1-3-nerved, without dorsal and ventral scale   | ... | LEMNA     |

### LEMNA L.

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|--|-----|----------------------|
| 1. Submerged water plants, floating at the surface only when flowering; fronds oblong to linear-lanceolate, often without a root; slit of budding pouch just dorsal to the margin of the frond | ... | <i>L. trisulca</i>   |
| 1. Floating water plants; fronds round to oblong or obovate with 1 root; slit of budding pouch coinciding with the margin of the frond, rarely central to the margin :                         |     |                      |
| 2. Thallus thin; root sheathed and winged at point of insertion; root-cap conspicuously acute  | ... | <i>L. perpusilla</i> |
| 2. Thallus thick and spongy with large cells; root sheath not winged; root-cap obtuse  | ... | <i>L. gibba</i>      |

*Lemna gibba* L. Sp. Pl. 970. 1753; Hook. f. Fl. Brit. India 6: 556. 1893; Cooke, Fl. Pres. Bombay 3: 343. 1958 (Repr. ed.); Hartog & van der Plas in Blumea 18: 362. 1970; van der Plas in Steenis, Fl. Males. 1, 7: 231, f. 5a-e. 1971; Hepper in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 2: 400, f. 399, 2A-F. 1981.

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Herbs, tiny. Fronds 0.6–1.2 cm across. Floral cavity lateral; spathe enclosing 2–1-staminate flowers and 1–pistillate. Utricles narrowly winged above, 1–2-seeded. Seeds ribbed and transversely striate.

*Fls. & Frts.* : September–December.

*Illus.* : van der Plas in Steenis, *op. cit.*; Hepper in Dassan. & Fosb. *op. cit.*

*Distrib.* : In ponds and tanks. Ahmednagar; Bombay; Pune; Yavatmal.

*L. perpusilla* Torr. Fl. N.Y. 2: 245. 1843; Hartog & van der Plas in Blumea 18: 363. 1970; van der Plas in Steenis, Fl. Males. 1, 7: 230, f. 4. 1971; Hepper in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 2: 398, f. 399, 1A–1B. 1981. *L. minor sensu* Hook. f. Fl. Brit. India 6: 556. 1893 *p.p.* non L. 1753; Hartog & van der Plas, *op. cit.* 362. *L. paucicostata* Hegelm. Lemnac. 139. 1869; Hook. f. *op. cit.*; Subr. Aquat. Ang. 78. 1962. *L. minima* Blatt. & Hallb. in J. Indian Bot. 2: 50. 1921. *L. blatteri* McC. in J. Bombay nat. Hist. Soc. 43: 153. 1942. *L. eleanorae* McC *op. cit.* 154.

Herbs, thalloid. Fronds entire. Stipes hyaline, fugacious. Flowering cavity lateral; spathe open. Staminate flowers 2; anthers 2–thecous. Pistillate flower 1; style convave. Utricles ellipsoid or ovoid, ribbed, 1-seeded laterally compressed.

*Fls. & Frts.* : May–January.

*Illus.* : van der Plas in Steenis, *op. cit.*; Hepper in Dassan. & Fosb. *op. cit.*

*Distrib.* : In ponds and tanks. Bombay; Kolhapur; Nagpur; Osmanabad; Pune; Satara; Thane; Yavatmal.

*Notes* : From the erstwhile Bombay Presidency three new species have been described viz., *L. minima* Blatt. & Hallb. in J. Indian Bot. 2: 50 1921; *L. blatteri* McC. in J. Bombay nat. Hist. Soc. 43: 153. 1942 & *L. eleanorae* McC. *Ibid.* 154 which are all *Lemna perpusilla* only.

*L. trisulca* L. Sp. Pl. 970. 1753; Hook. f. Fl. Brit. India 6: 557. 1893; Cooke, Fl. Pres. Bombay 3: 343. 1958 (Repr. ed.); Hartog & van der Plas in Blumea 18: 364. 1970; van der Plas in Steenis, Fl. Males. 1, 7: 231, f. 6. 1971.

Herbs. Fronds translucent, crenate–serrate near the apex, the young fronds hastate, at length tailed and attenuated into a stalk by which they remain attached to the parent frond. Flowers monoecious.

Seeds semi-anatropous, horizontal.

*Fls. & Frts.* : September–December.

*Illus.* : van der Plas in Steenis, *op. cit.*

*Distrib.* : In ponds and tanks. Kolhapur; Konkan (Cooke, *op. cit.*); Pune; Satara.

#### SPIRODELA Schleid.

***Spirodela polyrhiza*** (L.) Schleid. in *Linnaea* 13: 392. 1839; Subr. Aquat. Ang. 77. 1962; Hartog & van der Plas in *Blumea* 18: 360. 1970; van der Plas in Steenis, *Fl. Males.* 1, 7: 224, f. 1A–B, 2. 197. 1971; Hepper in Dassan. & Fosb. Rev. Handb. *Fl. Ceylon* 2: 401, f. 399, 3A–3B. 1981. *Lemna polyrhiza* L. Sp. Pl. 970. 1753; Hook. f. *Fl. Brit. India* 6: 557. 1893; Cooke, *Fl. Pres. Bombay* 3: 343. 1958 (Repr. ed.). *L. maxima* Blatt. & Hallb. in *J. Indian Bot.* 2: 49. 1921. *Spirodela maxima* (Blatt. & Hallb.) McC. in *J. Bombay nat. Hist. Soc.* 43: 158. 1942.

Herbs. Fronds solitary or 2–5 together, reniform, round or obovate with reddish–purple margin. Stipes hyaline, fugacious. Flowers minute, in marginal clefts of fronds; spathes 2-lipped; male flowers in pairs; female solitary. Fruits slightly winged at margins. Seeds 1–2.

*Fls. & Frts.* : September–April.

*Illus.* : van der Plas in Steenis, *op. cit.*; Hepper in Dassan. & Fosb. *op. cit.*

*Distrib.* : Floating in ponds and tanks. Ahmednagar; Kolhapur; Nagpur; Pune; Satara; Thane; Yavatmal.

*Notes* : Schleiden (*op. cit.*) separated the genus *Spirodela* from *Lemna* on the grounds of the occurrence of a dorsal and ventral scale, the conspicuous development of spiral vascula, and the clearly recognisable nodes with many roots.

#### WOLFFIA Horkel ex Schleid. (*nom. cons.*)

***Wolffia arrhiza*** (L.) Horkel ex Wimmer, *Fl. Schles.* ed. 3, 140. 1857; Hook. f. *Fl. Brit. India* 6: 557. 1893; Subr. Aquat. Ang. 79. 1962; Hartog & van der Plas in *Blumea* 18: 367. 1970; van der Plas in Steenis, *Fl. Males.* 1, 7: 237, f. 8. c–c. 1971. Hepper in Dassan. & Fosb. Rev. Handb. *Fl. Ceylon* 2: 402, f. 399, 4A–4B. 1981. *Lemna arrhiza* L. Mant. 294. 1771.

Plants floating in still water, in the form of thick, green, granular masses. Flowers opening on the surface from simple median pit; stamen solitary, with filament c 0.05 cm long; style short; stigma concave. Utricle c 0.07 cm long, ellipsoid, erect.

*Fls. & Frts.* : June–October.

*Illus.* : van der Plas in Steenis, *op. cit.*; Hepper in Dassan. & Fosb. *op. cit.*

*Distrib.* : Common throughout, floating in ponds and tanks. Nagpur, Osmanabad, Satara.

## ALISMATACEAE

- |   |     |             |
|---|-----|-------------|
| 1. Stamens 3  | ... | WIESNERIA   |
| 1. Stamens 6 to many :  |     |             |
| 2. Carpels inserted on a large, globular or oblong, receptacle; achenes more or less compressed | ... | SAGITTARIA  |
| 2. Carpels crowded on a minute receptacle; achenes swollen, orbicular in cross-section :        |     |             |
| 3. Leaves broadly sagittate; flowers male and bisexual; achenes with 2 lateral air-chambers     | ... | LIMNOPHYTON |
| 3. Leaves ovate to elliptic; flowers bisexual; achenes without air-chambers                     | ... | CALDESIA    |

## CALDESIA Parl.

*Caldesia oligococca* (F.v. Muell.) Buch.–Ham. in Engl. Bot. Jahrb. 2: 459. 1882; Hartog in Steenis, Fl. Males. 1, 5: 320, f. 1–2. 1957; Subr. Aquat. Ang. 84. 1962. *Alisma oligococcum* F.v. Muell. Fragm. Phyt. Austral. 1: 23. 1858; Hook. f. Fl. Brit. India 6: 560. 1893; Sant. *et al.* in J. Bombay nat. Hist. Soc. 55: 481, t. 1. 1958.

Leaves floating, radical, 8–12 x 5–8 cm, obtuse, pellucid dotted; petioles 40–60 cm long. Panicles 1–3, 25–40 cm long, pyramidal. Flowers white. Achenes 0.2–0.3 cm long, reniform, spinulose-warty. Seeds c 0.15 cm long, red-brown.

*Fls. & Frts.* : September–October.

*Illus.* : Hartog in Steenis, *op. cit.*; Sant. *et al.* *op. cit.*

*Distrib.* : Rare. Bombay.

## LIMNOPHYTON Miq.

*Limnophyton obtusifolium* (L.) Miq. Fl. Ind. Bat. 3: 242. 1856; Hook. f. Fl. Brit. India 6: 560. 1893; Cooke, Fl. Pres. Bombay 3: 345. 1958 (Repr. ed.); Hartog in Steenis, Fl. Males. 1, 5: 324, f. 4. 1957; Subr. Aquat. Ang. 3: 86, t. 3. 1962. *Sagittaria obtusifolia* L. Sp. Pl. 993. 1753. 'Nalkut'.

Herbs, c 75 cm long, robust, scapigerous, stemless. Leaves radical, 15-30 x 10-20 cm, broadly sagittate, pellucid-punctate, acute or subobtuse, or with rounded tip; basal lobes long, tapering to a fine point. Panicle with a stout angular scape, 60-120 cm long. Flowers greenish-white, many, in whorls at the nodes of the branches of the panicles. Achenes obovoid, base cuneate, 0.4-0.8 cm long, with a fine reticulation of scarious ribs, shortly beaked. Seeds c 0.4 cm long.

Fls. & Frts. : April-September.

Illus. : Hartog in Steenis, *op. cit.*; Subr. *op. cit.* 164, f. 52; Hepper, Fl. W. Trop. Afr. 3(1): 12, f. 318 (1-5). 1968; Matthew, Illus. Fl. Tamilnadu Carnatic 2: tt. 773 & 978d. 1982.

Distrib. : Submerged in margins of tanks. Bombay; Chandrapur; Nagpur; Raigad; Ratnagiri; Thane; Yavatmal.

## SAGITTARIA L.

- |  |     |                       |
|--|-----|-----------------------|
| 1. Mature female flowers with appressed sepals | ... | <i>S. guayanensis</i> |
|  |     | ssp. <i>lappula</i>   |
| 1. Mature female flowers with reflexed sepals  | ... | <i>S. trifolia</i>    |

*Sagittaria guayanensis* H.B. & K. ssp. *lappula* (D. Don) Bogin. in Mem. N.Y. Bot. Gard. 9: 192, f. 5. 1955; Hartog in Steenis, Fl. Males. 1, 5: 328, f. 6. 1957; Subr. Aquat. Ang. 87. 1962. *S. lappula* D. Don, Prodr. Fl. Nepal. 22. 1825. *S. guayanensis non* H.B. & K. 1850; Hook. f. Fl. Brit. India 6: 561. 1893.

Herbs, scapigerous. Leaves 1.5-6.5 cm long, ovate with rounded or emarginate apex, base deeply cordate, basal lobes obtuse, shortly petioled. Racemes c 1/3 as long as the peduncle, with 2-3 whorls of 2-3 flowers; 1-4 lower whorls with bisexual flowers, the upper ones male. Achenes 0.3-0.4 cm long, ellipsoid, short-stalked, with broad-spiny crest, beaked. Seeds brown, c 0.15 cm long.

Fls. & Frts. : August-October.

*Illus.* : Bogin, *op. cit.*; Hartog in Steenis, *op. cit.*; Mahesh. *Illus. Fl. Delhi* f. 208. 1966.

*Distrib.* : Submerged in margins of tanks. Nagpur; Sindhudurg; Yavatmal.

*S. trifolia* L. Sp. Pl. 993. 1753; Karthik. *et al.* Fl. Ind. Enum. Monocot. 3. 1989. *S. sagittifolia* L. *op. cit.*; Hook. f. Fl. Brit. Ind. 6: 561. 1893. Cooke, Fl. Pres. Bombay 3: 345. 1958 (Repr. ed.); Subr. Aquat. Ang. 87. 1962. *S. sagittifolia* ssp. *leucopetala* (Miq.) Hartog in Steenis, Fl. Males. 1, 5: 332. 1957.

Herbs, scapigerous; rhizomes thick, tuberous, stoloniferous. Leaves 4.0–21.5 x 0.8–1.2 cm, hastate or sagittate, basal lobes usually diverging narrower and often longer than the rest of the blade. Flowers 1.0–1.9 cm across, white with a purple claw, in 3–5 whorls along the scape with 3–5 flowers in each whorl, the lower whorls female, nearly sessile with staminodes; the upper male with longer pedicels; hermaphrodite flowers rare. Achenes obliquely ovate, apiculate, wing broad, entire or subrenate.

*Fls. & Frts.* : February–May.

*Illus.* : Sald. in Sald. & Nicols. Fl. Hassan Dt. 630, f. 105. B–Ba. 1976 (*S. sagittifolia* ssp. *leucopetala*).

*Distrib.* : Submerged in margins of tanks. Nagpur; Sindhudurg.

#### WIESNERIA Mich.

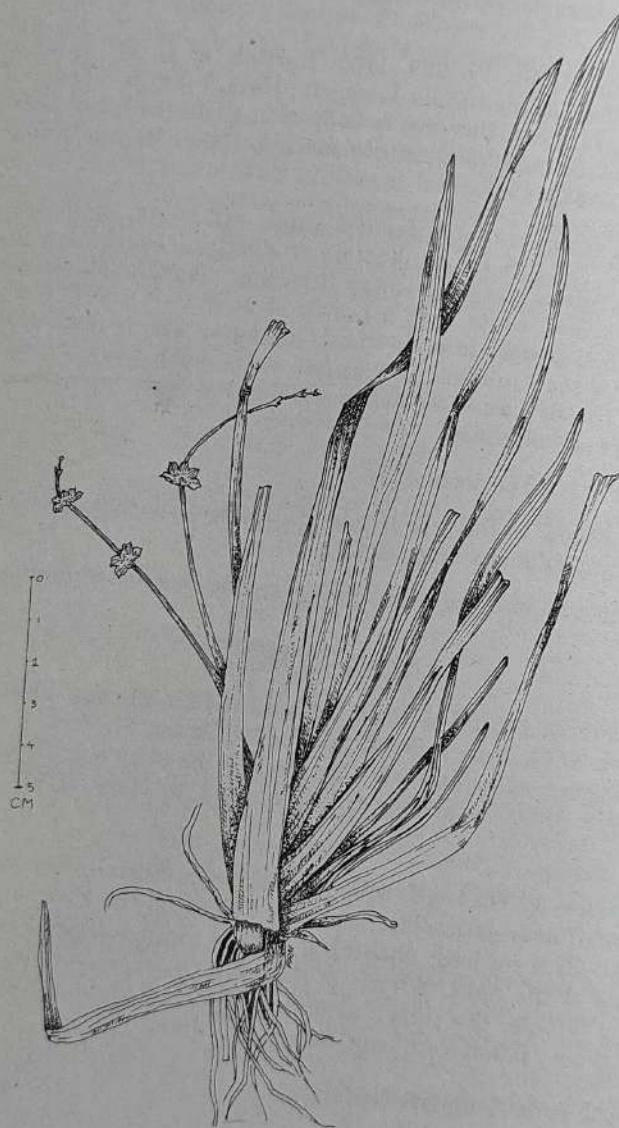
*Wiesneria triandra* (Dalz.) Mich. in DC. Monogr. Phan. 3: 82. 1881; Hook. f. Fl. Brit. India 6: 562. 1893; Cooke, Fl. Pres. Bombay 3: 346. 1958 (Repr. ed.); Joseph & Chandr. in J. Bombay nat. Hist. Soc. 77: 169, f. 1–11. 1980. *Sagittaria triandra* Dalz. in Hook. J. Bot. 2: 144. 1850.

Herbs, c 30 cm high, scapigerous; roots fibrous. Leaves 5–12 x 0.4–0.9 cm, linear-lanceolate, obtusely keeled on the back, apex acute; petiole 6.0–37.5 cm long, sheathing at base. Scapes 12.5–15.0 cm high, floriferous at the apex. Whorls of flowers 6–8, of which the 1–2 lower consist of female, the upper of males. Flowers white, usually 3 in a whorl. Achenes 0.3–0.5 cm long, ovoid, apiculate.

*Fls. & Frts.* : August–September.

*Illus.* : Joseph & Chandr. *op. cit.*

*Distrib.* : In marshes. Ratnagiri; Sindhudurg.



*Wiesneria triandra* (Dalz.) Mich.

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## BUTOMACEAE

## BUTOMOPSIS Kunth.

**Butomopsis latifolia** (D. Don) Kunth, Enum. Pl. 3: 165. 1841.  
*Butomus latifolius* D. Don, Prodr. Fl. Nepal. 22. 1825. *Butomopsis lanceolata* (Roxb.) Kunth, op. cit.; Hook.f. Fl. Brit. India 6: 562. 1893; Cooke, Fl. Pres. Bombay 3: 347. 1958 (Repr. ed.). *Tenagocharis latifolia* (D. Don) Buchen. in Abh. Naturw. Ver. Bremen 2:6. 1868; Subr. Aquat. Ang. 88, t. 4. 1962.

Herbs, annual, juice milky. Leaves 5–15 x 1.5–5.6 cm, elliptic-lanceolate, apex acute, base attenuated into the petiole. Scape usually longer than leaves, stout, bearing an umbel of 3–20 flowers at its apex. Flowers white or light blue. Follicles 6–7, reticulately veined, tapering into short beaks. Seeds numerous, oblong, with rounded ends, dark brown, shining.

Fls. & Frts. : September–February.

Illus. : Subr. op. cit. 165, f. 53; Hepper, Fl. W. Trop. Afr. 3: 6, f. 315. 1968 (*Tenagocharis latifolia*).

Distrib. : Submerged in ponds. Bhandara; Chandrapur; Nagpur; Yavatmal.

## APONOGETONACEAE

APONOGETON L. f. (*nom. cons.*)

- |   |     |                      |
|---|-----|----------------------|
| 1. Inflorescence forked and 2-spiked  | ... | <i>A. satarensis</i> |
| 1. Inflorescence single, 1-spiked :   |     |                      |
| 2. Plant stoloniferous; tepals longer than 0.5 cm, caducous                           | ... | <i>A. undulatus</i>  |
| 2. Plants not stoloniferous; tepals up to 0.3 cm, persistent :                        |     |                      |
| 3. Ovules 1–2   | ... | <i>A. echinatus</i>  |
| 3. Ovules 4–8 :   |     |                      |
| 4. Leaves submerged and floating; flowers turned towards all directions; testa double | ... | <i>A. natans</i>     |
| 4. Leaves all emerging; flowers all around axis; testa single                         | ... | <i>A. bruggenii</i>  |

**Aponogeton bruggenii** Yadav & Govekar in Rheede 4: 34, figs. 1–4. 1994.

Herbs, perennial, 10–30 cm high; tubers 0.6–3.0 x 1.2 cm, globose to elongate, crowned with fibrous roots. Leaves all emerging semi-erect;

petioles stout, thick, 5-25 x 0.3-0.4 cm; lamina 2.0-7.5 x 1.8-3.3 cm, thick, oblong-ovate, acute or rounded at apex, truncate or rounded at base, 7-9 nerved, Inflorescence one spiked, peduncle 20-30 cm long; spathe c 1.5 x 0.6 cm, caducous, spikes 6-7 cm long, densely flowered. Flowers pink. Fruits 5-7 x 2-3 mm, beaked, smooth. Seeds with simple testa.

*Fls & Frt.* : August-September.

*Illus.* : Yadav & Govekar, *op. cit.*

*Distrib.* : Found growing in paddy fields. Sindhudurg (Yadav & Govekar, *op. cit.*).

*Notes.* : It differs from *A. crispus* Thunb. in its nearly erect, emergent, thick, brittle leaves with stout, acutely triangular petiole, blue-coloured ovaries, smaller fruits and small, non-grooved cylindrical embryo.

*A. echinatus* Roxb. Fl. Ind. 2: 210. 1832 ("*echinatum*"); Hook. f. Fl. Brit. India 6: 564. 1893; van Bruggen in Blumea 18: 483, f. 1(2) & 7, map 2. 1970.

Tubers up to 5 cm across. Submerged leaves up to 25.0 x 4.5 cm, base cuneate or truncate, apex rounded; floating leaves up to 20 x 5 cm, base cordate or rounded, apex rounded or cuneate with a blunt tip. Spathe up to 2.5 cm, caducous; inflorescence up to 13 cm long, densely or rather laxly flowered. Flowers white, pink or violet. Follicles up to 1.2 x 0.5 cm, ovoid, terminally beaked, often with some irregular hard excrescences, 1-2-seeded.

*Fls. & Frts.* : August-November.

*Illus.* : van Bruggen, *op. cit.*; Ramam. in Sald. & Nicols. Fl. Hassan Dt. 636, f. 106. 1976; Matthew, *Illus. Fl. Tamilnadu Carnatic* 2: t. 774. 1982.

*Distrib.* : Anchored hydrophyte with floating leaves in tanks. Ratnagiri.

*A. natans* (L.) Engl. & Krause in Engl. Pflanzenr. 24: 11. 1906; Subr. Aquat. Ang. 92, t. 5. 1962; van Bruggen in Blumea 18: 477, f. 2. (11), map 1. 1970. *Saururus natans* L. Mant. 227. 1771. *Aponogeton monostachyon* L. f. Suppl. 214. 1781; Hook. f. Fl. Brit. India 6: 564. 1893; Cooke, Fl. Pres. Bombay 3: 348. 1958 (Repr. ed.).

Herbs, aquatic, submerged; tubers 1.5-2.0 cm across or elongate up to 3 x 2 cm. Submerged leaves lanceolate or oblong, 3-6 x 0.4-1.5 cm; floating leaves linear-oblong, 8-12 x 1.8-3.0 cm. Spathes c 1.5 cm long.

Spikes 3-8 x 0  
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Spikes 3-8 x 0.4-0.5 cm. Flowers blue, bluish-violet, lilac or rosy pink.  
Follicles 3, subglobose, c 0.4 x 0.3 cm. Seeds oblong, ribbed.

*Fls. & Frts.* : July-October.

*Illus.* : Subr. *op. cit.* 166, f. 54; Mahesh. *Illus. Fl. Delhi* f. 209. 1966; van Bruggen, *op. cit.*; Matthew, *Further Illus. Fl. Tamilnadu Carnatic* 4: t. 620. 1988.

*Distrib.* : Common in stagnant, shallow waters and ponds. Bombay; Chandrapur; Nagpur; Thane; Yavatmal.

*A. satarensis* Sundararaghavan *et al.* in *Kew Bull.* 36: 687, f. 1. (A-K). 1982.

Herbs, scapigerous, partly submerged, annuals, 16-25 cm tall; tubers c 1.5 cm across, globose. Leaves 3.5-8.2 x 0.4-1.4 cm, lanceolate, base cuneate to rounded, apex tapering, acute. Spathes conical, 0.8-1.2 x 0.25-0.3 cm. Spikes dioecious, once forked, purple. Male inflorescence 5-7 cm long; tepals purple turning rose to pale white. Female inflorescence 2.5-3.5 cm long. Follicles 0.6-0.7 x 0.4 cm. Seeds 1-2.

*Fls. & Frts.* : May-September.

*Illus.* : Sundararaghavan *et al. op. cit.*

*Distrib.* : Vulnerable; in temporary shallow stagnant pools. Ratnagiri; Satara.

*Notes* : Endemic to Maharashtra.

*A. undulatus* Roxb. *Fl. Ind.* 2: 211. 1832 ("*undulatum*"); van Bruggen in *Blumea* 18: 465, f. 2(8), map 2, t. I. & II. 1970 & in Steenis, *Fl. Males.* 1, 7: 213, f. 1(1a-d, f) & f. 2. 1971. *A. microphyllum* Roxb. *op. cit.*; Hook. f. *Fl. Brit. India* 6: 565. 1893. *A. crispus sensu* Hook. f. *op. cit.* 564 *p.p. non* Thunb. 1784.

Stoloniferous, aquatic herbs; tubers c 0.6-2.5 cm across, ovoid, elongate or globose. Leaves mostly submerged, rarely floating; submerged leaves 10-35 x 0.6-3.0 cm, linear-oblong, lanceolate or strap shaped; floating leaves if present 20 x 3 cm. Spathes c 1.5 cm long; inflorescence 7-10 cm long. Flowers white or rosy pink. Follicles 0.5-0.6 x 0.3-0.4 cm, terminal, slightly curved.

*Fls. & Frts.* : July-September.

*Illus.* : van Bruggen, *op. cit.*

*Distrib.* : Rare in ponds and pools. Bombay (van Bruggen, *op. cit.*).

## POTAMOGETONACEAE

## POTAMOGETON L.

- |   |     |                       |
|---|-----|-----------------------|
| 1. Upper or all leaves floating   | ... | <i>P. nodosus</i>     |
| 1. Leaves all submerged :   |     |                       |
| 2. Leaves filiform, opaque  | ... | <i>P. pectinatus</i>  |
| 2. Leaves linear-oblong or ovate, translucent :   |     |                       |
| 3. Leaves amplexicaul, ovate, cordate, entire, 5-9-nerved; stems stout; peduncles short; spikes dense-flowered              | ... | <i>P. perfoliatus</i> |
| 3. Leaves semi-amplexicaul, linear-oblong, crisped, serrulate, 2-nerved; stems slender; peduncles long; spikes few-flowered | ... | <i>P. crispus</i>     |

**Potamogeton crispus** L. Sp. Pl. 126. 1753; Hook. f. Fl. Brit. India 6: 566. 1893; Cooke, Fl. Pres. Bombay 3: 350. 1958 (Repr. ed.); Aziz & Jafri in Nasir & Ali, Fl. W. Pak. 79: 7, f. 2, A-E. 1975.

Herbs, perennial; stem branched, compressed. Leaves 2.5-7.5 x 0.33-1.0 cm, obtuse; stipules small, caducous. Peduncles often curved, tapering upwards. Spikes 0.63-0.75 cm long, ovoid-oblong. Flowers small; sepals clawed; limb suborbicular. Drupelets 0.33-0.50 x 0.25-0.30 cm, obliquely ovoid, terminated by a slightly recurved, compressed beak.

*Fls. & Frts.* : September-May.

*Illus.* : Aziz & Jafri in Nasir & Ali, *op. cit.*

*Distrib.* : In tanks. Nagpur; Pune; Ratnagiri.

**P. nodosus** Poir. in Lam. Encycl. Suppl. 4: 535. 1816; Subr. Aquat. Ang. 95. 1962; Aziz & Jafri in Nasir & Ali, Fl. W. Pak. 79: 3, f. 1, A-C. 1975. *P. indicus sensu* Hook. f. Fl. Brit. India 6: 565. 1893 *non* Roxb. 1832; Cooke, Fl. Pres. Bombay 3: 349. 1958 (Repr. ed.). *P. oblongus sensu* Hook. f. *op. cit.* 566. *p.p. non* Vir. 1802.

Herbs; stems terete, branched, smooth. Leaves petiolate; the upper 6.2-10.0 x 2.5-3.7 cm, alternate or uppermost opposite, oblong or elliptic-lanceolate, acute, obtuse or acuminate, thinly coriaceous, many-nerved, base acute or rounded; the lower submerged. Leaves reaching c 20 cm long, membranous, undulate. Peduncles axillary or leaf-opposed, 2.5-5.0 cm long, stout or slender. Spikes c 3.7 cm long, dense-flowered, green. Drupelets 0.3-0.4 x 0.2-0.3 cm, obliquely obovoid, spongy, shortly beaked.

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*Fls. & Frts.* : October–December.

*Illus.* : Aziz & Jafri in Nasir & Ali, *op. cit.*; Ramam. in Sald. & Nicols. Fl. Hassan Dt. 639, f. 108 B–Bc. 1976; Matthew, *Illus. Fl. Tamilnadu Carnatic* 2: t. 775. 1982.

*Distrib.* : Anchored with floating leaves or submerged in ponds and tanks. Akola; Bombay; Kolhapur; Nagpur; Pune; Satara.

***P. pectinatus*** L. Sp. Pl. 127. 1753; Hook. f. Fl. Brit. India 6: 567. 1893; Cooke, Fl. Pres. Bombay 3: 350. 1958 (Repr. ed.); Subr. Aquat. Ang. 95. 1962; Aziz & Jafri in Nasir & Ali, Fl. W. Pak. 79: 9, f. 2, F–G. 1975.

Herbs; stems copiously distichously branched, forming with the leaves tassel-like masses when taken out of the water. Leaves alternate, 2.5–15.0 x 0.1–0.25 cm, acute; stipules adnate to the leaf-sheaths, the tips free. Peduncles with the spikes 5.0–7.5 cm long, usually longer than leaves. Flowers few, arranged in distant whorls, green. Drupelets 0.33–0.4 x 0.25–0.3 cm, turgid, dimidiate, obovoid, slightly compressed, shortly beaked, rounded and obscurely 3-keeled on the back, with a very short straight beak.

*Fls. & Frts.* : August–October.

*Illus.* : Subr. *op. cit.* 167, f. 55; Aziz & Jafri in Nasir & Ali, *op. cit.*; Ramam. in Sald. & Nicols. Fl. Hassan Dt. 639, f. 108 C. 1976.

*Distrib.* : Submerged in fresh water pools. Buldhana; Kolhapur; Nagpur; Pune; Sholapur.

***P. perfoliatus*** L. Sp. Pl. 126. 1753; Hook. f. Fl. Brit. India 6: 566. 1893; Cooke, Fl. Pres. Bombay 3: 349. 1958 (Repr. ed.); Subr. Aquat. Ang. 95. 1962; Aziz & Jafri in Nasir & Ali, Fl. W. Pak. 79: 5, 1, G–K. 1975.

Herbs; stems terete, dichotomously branched. Leaves 2.5–6.2 x 1.0–2.5 cm, sessile, obtuse, membranous; stipules small, caducous. Peduncles short. Spikes 0.63–2.25 cm long. Drupelets 0.2–0.35 x 0.15–0.2 cm, obliquely ovoid, slightly compressed, with a short usually curved beak.

*Fls. & Frts.* : February–April.

*Illus.* : Aziz & Jafri in Nasir & Ali, *op. cit.*; Ramam. in Sald. & Nicols. Fl. Hassan Dt. 639, f. 108 A. 1976.

*Distrib.* : Anchored with floating leaves in tanks. Ahmednagar; Buldhana; Kolhapur; Pune.

## RUPPIACEAE

## RUPPIA L.

*Ruppia maritima* L. Sp. Pl. 127. 1753; McC. in J. Bombay nat. Hist. Soc. 45: 396, f. 1-12. 1945; Subr. Aquat. Ang. 96. 1962; Hara in J. Jap. Bot. 58: 324. 1983. *R. rostellata* Koch in Reichb. Ic. Pl. 2: 66, t. 174. 1824; Hook. f. Fl. Brit. India 6: 568. 1893; Cooke, Fl. Pres. Bombay 3: 351. 1958 (Repr.ed.).

Herbs forming tangled masses of filiform leafy flaccid stem and branches. Leaves filiform, 5-10 cm long, dull olive-green. Peduncles 0.6-2.5 cm long. Flowers minute, in pairs enclosed in a leaf-sheath. Stipe of carpels rapidly lengthening after flowering up to 2.5 cm long, spreading and forming an umbellate head of achenes. Achenes 0.2-0.3 x 0.1-0.15 cm, beaked; endocarp hard.

*Fls. & Frts.* : December-February.

*Illus.* : McC. *op. cit.*; Subr. *op. cit.* 168, f. 56, 1-6; Hepper, Fl. W. Trop. Afr. 3(1): 18, f. 323. 1968; Aziz in Nasir & Ali, Fl. W. Pak. 80: 2, f. 1, A-G. 1975.

*Distrib.* : Submerged in brackish water. Bombay; Ratnagiri.

## ZANNICHELLIACEAE

## ZANNICHELLIA L.

*Zannichellia palustris* L. Sp. Pl. 969. 1753; Dandy in Rech. f. Fl. Iran. Fasc. 85: 2. 1971. *Z. palustris* ssp. *pedicellata* Hook. f. Fl. Brit. India 6: 568. 1893; Subr. Aquat. Ang. 97. 1962.

Herbs, submerged. Leaves 2.5-6.0 cm long, alternate or opposite, narrowly linear, filiform, entire. Flowers minute, unisexual, enclosed in leaf sheaths. Drupelets usually 4 stipitate, coriaceous, compressed.

*Fls. & Frts.* : December-February.

*Illus.* : Subr. *op. cit.* 168, f. 56, 7-9.

*Distrib.* : In salt marshes or in fresh water. Bombay; Nagpur; Pune.

## NAJADACEAE

## NAJAS L.

1. Seeds 0.4-0.45 x 0.2-0.25 cm, intravaginal scales up to 1 1/2 times as long as broad, fleshy; internodes sometimes dentate

... *N. marina*

1. Seeds less than only c 0.07 cm filiform, thin
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2. Male fl

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1813; Hook.  
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I  
Nagp

1. Seeds less than 0.35 cm long, if nearly 0.35 cm then only c 0.07 cm broad; intravaginal scales lanceolate to filiform, thin; internodes smooth :

2. Male flowers enclosed in a spathe

... *N. indica*

2. Male flowers not enclosed in a spathe

... *N. graminea*

**Najas graminea** Del. Descr. Egypt. Hist. Nat. 2: 282, t. 50, f. 3. 1813; Hook. f. Fl. Brit. India 6: 569. 1893; de Wilde in Steenis, Fl. Males. 1, 6: 169, f. 2e, j. 1962; Subr. Aquat. Ang. 100. 1962.

Herbs, submerged, 20–30 cm high, much branched. Leaves 2.5–3.5 x 0.07–0.1 cm, flat, narrowly linear, apex obtuse, margins spinulose. Flowers monoecious, solitary or 2–4—together, in different stages, together with one male, or male solitary. Fruits ellipsoid-oblong. Seeds c 0.23 x 0.08 cm.

*Fls. & Frts.* : June–October.

*Illus.* : de Wilde in Steenis, *op. cit.*; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 776. 1982.

*Distrib.* : Submerged in stagnant fresh waters. Kolhapur; Nagpur; Osmanabad; Pune.

**N. indica** (Willd.) Cham. in Linnaea 4: 501. 1829; de Wilde in Steenis, Fl. Males. 1, 6: 166, f. 2(1). 1962; Subr. Aquat. Ang. 101. 1962. *Caulina indica* Willd. in Mem. Ac. R. Sc. Berl. 89, f. 3. 1801. *Najas minor sensu* Hook. f. Fl. Brit. India 6: 569. 1893 *pro majore parte non* All. 1785; Cooke, Fl. Pres. Bombay 3: 352. 1958 (Repr. ed.). *N. tenuis* A. Br. ex Magnus, Beitr. Najas. 7. 1870 *non Zostera tenuis* Reut. 1854; Hook. f. *op. cit.* 570.

Herbs, submerged, 4.5–25.0 cm high; stems slender, dichotomously branched. Leaves 1.0–2.3 x 0.13 cm, narrowly linear, the upper recurved, with 6–12 spreading teeth on each margin; sheaths truncate, rounded. Flowers fascicled, monoecious, the male and female often found in successive leaf-axils. Achenes 0.2–0.33 cm long, ellipsoid. Seeds narrowly ellipsoid, pitted.

*Fls. & Frts.* : August–January.

*Illus.* : de Wilde in Steenis, *op. cit.*; Gandhi in Sald. & Nicols. Fl. Hassan Dt. 637, f. 107. 1976; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 776. 1982.

*Distrib.* : Submerged in stagnant fresh waters. Chandrapur; Nagpur; Pune; Raigad; Sindhudurg; Thane.

*Notes* : Cooke (*op. cit.*) had not seen any specimen from Bombay and included it on the authority of Woodrow.

*N. marina* L. Sp. Pl. 1015. 1753; de Wilde in Steenis, Fl. Males. 1, 6: 162, f. 2a, g-h, 3. 1962. *N. major* All. Fl. Pedem. 2: 221. 1785; Hook. f. Fl. Brit. India 6: 569. 1893.

Herbs, submerged, up to 70 cm high. Leaves 1.5-4.5 x 0.15-0.35 cm, flat, apex acute to blunt, margins on either side with 5-12 spiny teeth. Flowers solitary; spathe of male flowers c 0.45 cm long; spathe of female flower absent. Seeds ellipsoid to ovoid, narrowing to the tip somewhat compressed.

*Illus.* : de Wilde in Steenis, *op. cit.*

*Distrib.* : Jalgaon.

## ERIOCAULACEAE

### ERIOCAULON L.

1. Anthers white or yellow when young :
  2. Plants of running water :
    3. Leaves 0.25-0.43 cm wide ... *E. breviscapum*
    3. Leaves less than 0.25 cm wide :
      4. Involucre pale ... *E. dalzellii*
      4. Involucre black :
        5. Leaves linear ... *E. miserum*  
var. *mitophyllum*
        5. Leaves acicular ... *E. fluatile*
  2. Plants of marshy ground :
    6. Tuberous herbs; male flowers distinctly anisopetalous, the largest petal of which projects the receptacular bractlet giving fringed beyond appearance to the head ... *E. tuberiferum*
    6. Herbs not tuberous; corolla-lobes of male flowers subequal :
      7. Peduncles not ribbed; female sepals truncate or rounded, denticulate ... *E. ritchieanum*
      7. Peduncles 5-8-ribbed; female sepals acute :
        8. Sheath with truncate mouth; peduncles 1-4; anthers yellow, turning black; female petals present ... *E. melaleucum*

8. Sheath obliquely split; peduncles numerous; anthers white; female petals absent ... *E. cinereum*
1. Anthers black or brown :
9. Submerged plants with stem over 30 cm long ... *E. setaceum*
9. Terrestrial or swamp plants, or if submerged the stem not more than 2.5 cm long :
10. Floral bracts scabrid or puberulous, pale :
11. Female sepals boat-shaped or flat :
12. Female sepals 2 ... *E. hamiltonianum*
12. Female sepals 3:
13. Heads 0.2–0.3 cm across ... *E. humile*
13. Heads 0.75 cm across ... *E. oryzetorum*
11. Female sepals boat-shaped, two at least with a wing or crest :
14. Heads under 0.5 cm in diam. :
15. Female sepals 2 ... *E. minutum*
15. Female sepals 3:
16. Female sepals equally crested ... *E. margaretae*
16. Female sepals unequal, one not crested ... *E. elenorae*
14. Heads 0.75 cm or more in diam. :
17. Floral bracts much longer than flowers... *E. stellulatum*
17. Floral bracts short :
18. Peduncle thickened below the heads ... *E. vanheurckii*
18. Peduncle not thickened below the heads :
19. Leaves with cuspidate apex ... *E. cuspidatum*
19. Leaves not cuspidate ... *E. sexangulare*
10. Floral bracts usually black with white hairs on the back :
20. Floral bracts at least the lower, hidden by the projecting male petal :
21. Heads 0.6–1.2 cm in diam. ... *E. polycephalum*
21. Heads 0.4–0.6 cm in diam. :
22. Leaves 2.5–3.7 cm long, lanceolate; scapes 15–25 cm long ... *E. odoratum*
22. Leaves 6.2–7.5 cm long, linear from a broad base; scapes 30–45 cm long ... *E. cristatum*

20. Petals enclosed, or not projecting conspicuously beyond the bracts :
23. Whole plant hairy, heads depressed :
24. Bracts of the involucre black or brownish at base :
25. Floral bracts acuminate ... *E. robusto-brownianum*
25. Floral bracts acute ... *E. nilagirense*
24. Bracts of the involucre pale, straw colored when dry :
26. Floral bracts white ... *E. wightianum*
26. Floral bracts blackish or darkish :
27. Scapes 12.5–15.0 cm long; female sepals unequal, visible beyond the floral bracts ... *E. lanceolatum*
27. Scapes 20–30 cm long; female sepals shorter than the floral bracts ... *E. infirmum*
23. Plants glabrous or nearly so, heads globose or ovoid :
28. Receptacles glabrous :
29. Female sepals 3, rarely 2 :
30. Scapes twice as long as leaves ... *E. nepalense*
30. Scapes slightly longer or shorter than leaves :
31. Floral bracts hairy at the tip ... *E. xeranthemum*
31. Floral bracts glabrous ... *E. indicum*
29. Female sepals 2, rarely 3 :
32. Scapes 5–10 cm long; heads truncate by horizontal involucre ... *E. truncatum*
32. Scapes 10–15 cm long; involucre less horizontal :
33. Heads 0.4–0.6 cm across; female petals glabrous ... *E. duthiei*
33. Heads 0.7–1.0 cm across; female petals hairy in upper part ... *E. bolei*
28. Receptacles villous :
34. Female sepals 2 ... *E. sedgwickii*
34. Female sepals 3 :
35. One female sepal flat or linear :
36. Involucral bract projecting above the head ... *E. dianae*
36. Involucral bract shorter than the head ... *E. conicum*
35. All the female sepals boat-shaped or flat :
37. Leaves red or drying red ... *E. quinquangulare*

37. Leaves not drying red :

38. Involucral bracts reflexed :

39. Heads 0.4 cm in diam. ... *E. sollyanum*

39. Heads 0.6–0.75 cm in diam. ... *E. collinum*

38. Involucral bracts obtuse, horizontal :

40. Female petals absent ... *E. achiton*

40. Female petals present :

41. Female petals oblanceolate ... *E. luzulifolium*

41. Female petals linear or oblong :

42. Female petals oblong, glabrous ... *E. santapau*

42. Female petals linear, bearing long hairs from near base ... *E. thwaitesii*

**Eriocaulon achiton** Koern. in Linnaea 27: 630. 1856; Hook. f. Fl. Brit. India 6: 584. 1893; Fyson in J. Indian Bot. 2: 202. 1921; Kulkarni & Desai in J. Bombay nat. Hist. Soc. 69: 233. 1972.

Herbs, 6–10 cm tall, annual. Leaves 2.0–2.5 cm long, linear, narrow. Scape twice as long as leaves, slender. Heads obconic or hemispheric. Sepals of both sexes 2 only, narrow; female petals absent. Seeds broadly ovate, dark brown, with longitudinal lines.

*Fls. & Frts.* : August–October.

*Illus.* : Fyson, *op. cit.* f. on p. 203.

*Distrib.* : Ahmednagar; Kolhapur; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

**E. bolei** Bole & Almeida in J. Bombay nat. Hist. Soc. 83: 600. 1987.

Herbs, 10–20 cm tall, sheaths 3.7–5.0 cm long. Leaves small, lanceolate. Heads c 1 cm across, white. Male flowers 1–3 in a single bract; sepals 2, lanceolate or spatulate; petals united into a tube; stamens 4–6, anthers basifixed. Female flowers 1–2 in each bract; sepals 2, boat-shaped, hairy on the back; petals linear, with faint black spots with long hairs. Nuts brownish-red.

*Fls. & Frts.* : November.

*Distrib.* : Rare in running water. Satara (Bole & Almeida, *op. cit.*).

**E. breviscapum** Koern. in Linnaea 27: 676. 1856; Hook. f. Fl. Brit. India 6: 575. 1893; Cooke, Fl. Pres. Bombay 3: 356. 1958 (Repr.

ed.); Fyson in J. Indian Bot. 3: 14, t. 45. 1922; Kulkarni & Desai in J. Bombay nat. Hist. Soc. 69: 234. 1972.

Herbs, tufted; stems short. Leaves 20–25 x 0.4 cm, with broad sheathing base, then suddenly narrowed to a long linear blade. Scapes a little longer than leaves. Heads 0.75–1.2 cm across; involucre black, or the outer bracts pale, reflexed. Seeds subglobose, pale yellow.

*Fls. & Frts.* : October–April.

*Illus.* : Fyson, *op. cit.*

*Distrib.* : Rare in still water. Kolhapur; Satara.

**E. cinereum** R. Br. Prodr. 254. 1810; Kulkarni & Desai in J. Bombay nat. Hist. Soc. 69: 233. 1972. *E. sieboldianum* Sieb. & Zucc. ex. Steud. Syn. Pl. Cyp. 2: 272. 1855 ("*sieboldtianum*"); Hook. f. Fl. Brit. India 6: 577. 1893; Cooke, Fl. Pres. Bombay 3: 357. 1958 (Repr. ed.); Fyson in J. Indian Bot. 3: 15, t. 50 & 51. 1922.

Herbs, 8–10 cm tall, annual. Leaves 3.7–5.0 cm long, narrowly linear, acute. Scapes 3.7–12.5 cm long, slender. Heads 0.25–0.4 cm across, ovate or conical; involucre bracts obtuse, short; floral bracts oblong–acute, pale dark. Male flowers perfect; female sepals narrow. Receptacle with a few hairs. Seeds ellipsoid, smooth, reddish–brown.

*Fls. & Frts.* : August–December.

*Illus.* : Fyson, *op. cit.*; Ugemuge, Fl. Nagpur Dt. t. 163. 1986; Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 621. 1988.

*Distrib.* : In marshes and wet rice fields. Akola; Ahmednagar; Amaravati; Bombay; Kolhapur; Nagpur; Pune; Ratnagiri; Satara; Sindhudurg; Thane.

**E. collinum** Hook. f. Fl. Brit. India 6: 584. 1893; Fyson in J. Indian Bot. 2: 206. 1921; Kulkarni & Desai in J. Bombay nat. Hist. Soc. 69: 233. 1972.

Herbs, 10–15 cm tall; stems absent or if present, elongate. Leaves 3.7–6.2 x 0.6 cm, flat, obtuse or subulate if submerged. Scapes many, 7.5–20.0 cm long. Sheath c as long as leaves. Heads c 0.6 cm across, dark, globose; involucre bracts dark or the outermost or all pale, at length reflexed; floral bracts dark. Seeds oblong–subglobose, brown.

*Fls. & Frts.* : September–October.

*Illus.* : Fyson, *op. cit.* f. on p. 207.

*Distrib.* : Ahmednagar; Kolhapur; Raigad.

*E. conicum* (Fyson) C.E.C. Fischer in Gamble, Fl. Pres. Madras 1620. 1931 [3: 1128. 1957 (Repr. ed.)]; Kulkarni & Desai in J. Bombay nat. Hist. Soc. 69: 232. 1972. *E. diana* var. *conica* Fyson in J. Indian Bot. 2: 260. 1921.

Herbs, 10–15 cm tall, annual, tufted. Leaves linear, acuminate. Scapes many, ribbed. Sheaths shorter than leaves. Heads distinctly conical with horizontal base, black; involucre and floral bracts obovate. Seeds oblong-subglobose, yellowish-brown.

*Fls. & Frts.* : August–September.

*Distrib.* : Rare on the surface of moist rocks. Kolhapur.

*E. cristatum* Mart. in Wall. Pl. Asiat. Rar. 3: 28. 1832; Hook. f. Fl. Brit. India 6: 574. 1893; Fyson in J. Indian Bot. 2: 312, t. 31. 1921.

Herbs, densely tufted; stems short or up to 2.5 cm long. Leaves 7–15 x 0.5–0.43 cm, linear, many-nerved. Scapes 15.0–37.5 cm long. Heads c 0.75 cm across, globose, white; involucre black or white; floral bracts deltoid. Seeds oblong.

*Fls. & Frts.* : November.

*Illus.* : Fyson, *op. cit.*

*Distrib.* : Rare. Satara.

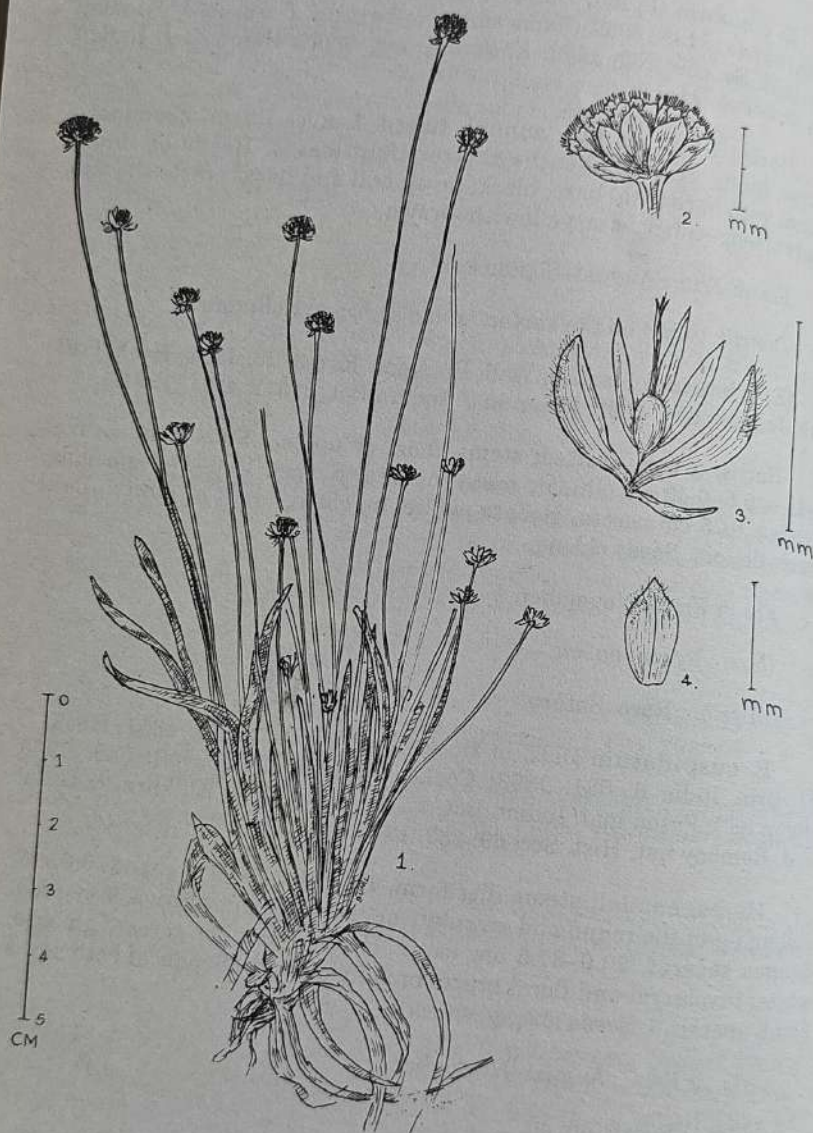
*E. cuspidatum* Dalz. in Hook. Kew J. Bot. 3: 281. 1851; Hook. f. Fl. Brit. India 6: 581. 1893; Cooke, Fl. Pres. Bombay 3: 359. 1958 (Repr. ed.); Fyson in J. Indian Bot. 2: 317, t. 38. 1921; Kulkarni & Desai in J. Bombay nat. Hist. Soc. 69: 233. 1972.

Herbs, annual; stems disciform. Leaves 2.5–10.0 x 0.43–0.6 cm, oblong up to the round and apiculate or cuspidate apex above, 7-nerved. Scapes several, 20.0–37.5 cm long. Heads c 0.6 cm across, globose, white; involucre and floral bracts broadly obovate. Sepals of both sexes 2 only; petals 3. Seeds oblong, smooth.

*Fls. & Frts.* : August–November.

*Illus.* : Fyson, *op. cit.*

*Distrib.* : In water logged areas. Kolhapur; Raigad; Ratnagiri; Satara; Sindhudurg.



*Eriocaulon dianae* Fyson var. *parviflora* Fyson  
 1. Habit 2. Flower head 3. Female flower 4. Female bract

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*E. dalzellii* Koern. in *Linnaea* 27: 605. 1856; Hook. f. *Fl. Brit. India* 6: 580. 1893; Kulkarni & Desai in *J. Bombay nat. Hist. Soc.* 69: 234. 1972. *E. rivulare* Dalz. in Hook. *Kew J. Bot.* 3: 280, 1851 non G. Don ex. Bth. 1849; Cooke, *Fl. Pres. Bombay* 3: 355. 1958 (Repr. ed.); Fyson in *J. Indian Bot.* 3: 14, t. 46. 1922.

Herbs; stems short or absent, thickly covered with the numerous leaves. Leaves 10.0–22.5 x 0.2 cm, linear. Scapes numerous, up to 32.5 cm long. Heads globose; involucral bracts pale, at length slightly reflexed; floral bracts oblanceolate-oblong. One male petal longer than the others. Seeds globose, smooth.

*Fls. & Frts.* : October–December.

*Illus.* : Fyson, *op.cit.*

*Distrib.* : Kolhapur; Pune; Ratnagiri; Satara; Sindhudurg.

*E. diana* Fyson in *J. Indian Bot.* 2: 259, t. 11. 1921; Kulkarni & Desai in *J. Bombay nat. Hist. Soc.* 69: 232. 1972.

- |   |     |                             |
|---|-----|-----------------------------|
| 1. The third female sepal oblanceolate                          | ... | var. <i>diana</i>           |
| 1. The third female sepal linear :                              |     |                             |
| 2. Involucral bracts many times longer than the head            | ... | var. <i>longi-bracteata</i> |
| 2. Involucral bracts as long as the head or slightly shorter :  |     |                             |
| 3. Involucral bracts as long as the head, spreading             | ... | var. <i>parviflora</i>      |
| 3. Involucral bracts slightly shorter than the head, reflexed : |     |                             |
| 4. Plants robust  | ... | var. <i>richardiana</i>     |
| 4. Plants not robust  | ... | var. <i>triloboides</i>     |

var. *diana*.

Herbs, annual, erect, tufted. Leaves 3–7 x 0.4–0.6 cm, lanceolate. Scapes many. Heads 5–9 cm across, flat, hemispherical, globose or ovoid, longer than broad; involucral bracts longer than the head. Male flowers few; female flowers numerous, third sepal plane. Seeds minute, oblong-ellipsoid.

*Fls. & Frts.* : August–February.

*Illus.* : Fyson, *op.cit.*

*Distrib.* : In moist or marshy places. Ahmednagar; Bhandara; Bombay; Chandrapur; Kolhapur; Nasik; Pune; Raigad; Satara; Sindhudurg; Thane; Yavatmal.

var. *longi-bracteata* Fyson in *J. Indian Bot.* 2: 259, t. 13. 1921; Kulkarni & Desai in *J. Bombay nat. Hist. Soc.* 69: 232. 1972.

Herbs, tufted. Leaves 5.0–6.2 x 0.5 cm, linear-lanceolate. Scapes many, twice as long as the leaves. Heads c 0.6 cm in diam., ovoid, white, bracts spreading below over 1.2 cm across. Third sepal of female flower broad.

*Fls. & Frts.* : September–May.

*Illus.* : Fyson, *op.cit.*

*Distrib.* : Bhandara; Bombay; Kolhapur; Pune, Raigad; Ratnagiri; Sindhudurg.

var. *parviflora* Fyson in J. Indian Bot. 2: 260. 1921; Sant. in Rec. Bot. Surv. India 16(1): 294. 1967 (3rd Rev. ed.).

Head has no rays. Flowers small.

*Distrib.* : Pune (Sant. *op.cit.*).

var. *richardiana* Fyson in J. Indian Bot. 2: 260, t. 14. 1921.

Plants robust; stems c 0.6 cm thick, 1.2 cm long. Leaves 15–20 cm long. Scapes up to 35 cm long, slightly pubescent. Heads globose, rays absent. Third female sepal very short. Seeds oblong, light yellow.

*Illus.* : Fyson, *op.cit.*

*Distrib.* : Rare along banks of streams and in harvested rice-fields. Raigad (Fyson, *Ibid.* 3: 100. 1922); Ratnagiri.

var. *triloboides* Fyson in J. Indian Bot. 2: 260, t. 15. 1921.

Heads globose, white or black.

*Illus.* : Fyson, *op.cit.*

*Distrib.* : Pune (Fyson, *op.cit.*).

*E. duthiei* Hook. f. Fl. Brit. India 6: 578. 1893; Fyson in J. Indian Bot. 2: 200, t. 7. 1921; Kulkarni & Desai in J. Bombay nat. Hist. Soc. 69: 232. 1972.

Leaves c 2 cm long, broadly oblanceolate, acute from a 0.4 cm wide base. Scapes numerous, 2.5–15.0 cm long, slender. Heads c 0.45 cm across; involueral bracts pale; floral bracts oblong, cuspidate. Sepals 2 only, in both sexes; female petals narrow. Seeds oval, yellowish-brown with darker markings.

*Fls. & Frts.* : October–November.

*Illus.* : Fyson, *op. cit.*

*Distrib.* : Satara.

**E. elenorae** Fyson in J. Indian Bot. 2: 316, t. 35. 1921; Kulkarni & Desai in J. Bombay nat. Hist. Soc. 69: 233. 1972.

Herbs, tiny, tufted. Leaves 2.5–7.5 x 0.15–0.25 cm at the middle, 5 or 6-nerved. Scapes numerous, 5.0–12.5 cm across, 4 or 5-ribbed. Heads c 0.2 cm across, hemispheric; involucre bracts elliptic-acute; floral bracts similar, slightly acuminate, sparingly pubescent. Female sepals 3, unequal, one much the largest, the smallest not crested. Seeds 3, dark brown.

*Fls. & Frts.* : September–November.

*Illus.* : Fyson, *op. cit.*

*Distrib.* : In moist or marshy places. Bombay; Kolhapur; Nagpur; Nasik; Pune; Raigad; Ratnagiri; Satara; Sindhudurg.

**E. fluvatile** Trim. in J. Bot. 23: 270. 1885; Hook. f. Fl. Brit. India 6: 585. 1893; Fyson in J. Indian Bot. 3: 15, t. 49. 1922.

Submerged, aquatic herbs; root stock flexuous. Leaves many, acicular, 5–6 parallel veined with cross veins, up to 25 cm long, compressed, flaccid. Peduncles stiff, as long as or slightly longer than leaves, slightly twisted. Heads subglobose, black; involucre bracts ovate, in 2–3 rows.

*Fls.* : September–October.

*Illus.* : Fyson, *op. cit.*

*Distrib.* : Common in running waters (S.M. Almeida, Fl. Savantwadi 2: 63. 1990).

**E. hamiltonianum** Mart. in Wall. Pl. Asiat. Rar. 3: 29. 1832; Fyson in J. Indian Bot. 2: 313, t. 33. 1921. *E. oryzetorum sensu* Hook. f. Fl. Brit. India 6: 579. 1893 *p.p. non* Mart. 1832.

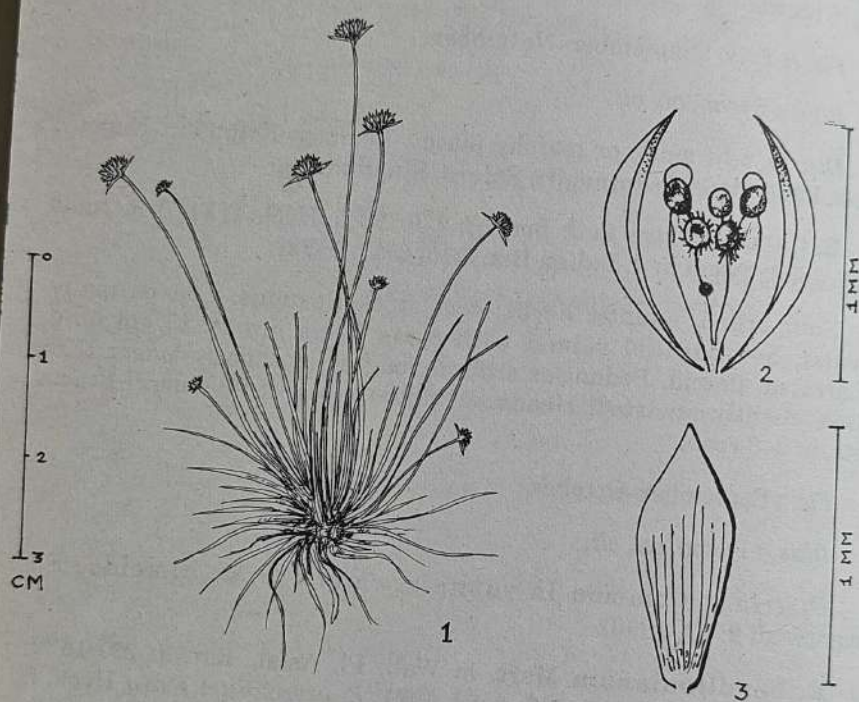
1. Leaves 3.7–6.2 cm long; heads 0.4 cm across
1. Leaves 1.2–3.7 cm long; heads 0.3 cm across

...var. *hamiltonianum*

...var. *minima*

#### var. *hamiltonianum*.

Perennials. Sheaths shorter than leaves. Scapes numerous, slender. Heads conical; involucre bracts blunt; floral bracts acute, hardly acuminate. Sepals narrow, 2 only. Petals 3, oblanceolate.



*Eriocaulon hamiltonianum* Mart. var. *minima* Fyson  
1. Habit 2. Male floret 3. Bract

*Fls. & Frts.* : September–October.

*Illus.* : Fyson, *op.cit.*

*Distrib.* : In moist places near water tanks. Pune; Raigad; Sindhudurg; Thane.

*var. minima* Fyson in J. Indian Bot. 2: 313. 1921.

Herbs, perennial, erect, tufted. Leaves linear. Scapes capillary, 2.5–10.0 cm long. Heads conical. Flowers few.

*Fls. & Frts.* : September–October.

*Distrib.* : Thane; Western Ghats. (Fyson, *op. cit.*).

**E. humile** Moldenke in Phytologia 3: 162. 1949; Sant. in Rec. Bot. Surv. India 16(1): 294. 1967 (3rd Rev. ed.).

Herbs, acaulescent. Leaves basal, rosulate, 2–4 cm long, c 0.1 cm wide at the mid-point, linear, acute. Scapes many, longer than leaves, twisted. Heads c 0.3 cm across, greyish; involucre bracts elliptic; floral bracts whitish, subhyaline.

*Fls. & Frts.* : October.

*Distrib.* : Bombay; Pune; Raigad; Satara.

**E. indicum** Moldenke in Phytologia 3: 163. 1949; Sant. in Rec. Bot. Surv. India 16(1): 295. 1967 (3rd Rev. ed.).

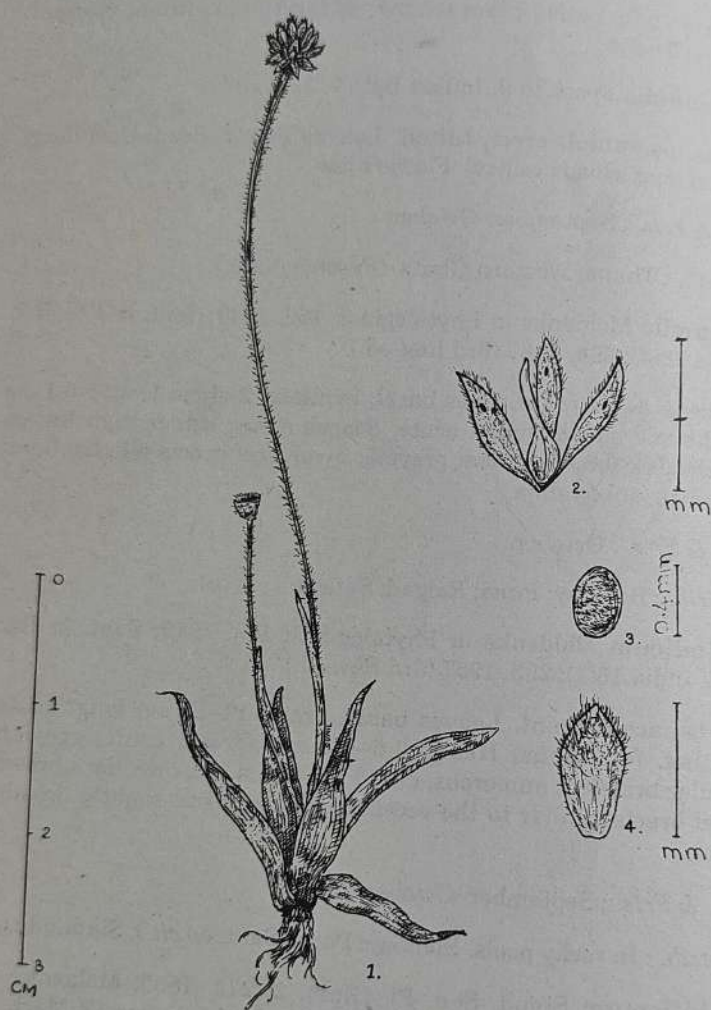
Herbs, acaulescent. Leaves basal, erect, 13–14 cm long, acute; sheaths lax, foliaceous. Heads 0.5–0.8 cm across, conic, greyish; receptacular bractlets numerous, c 0.19 x 0.12 cm, obovate, dark brown; involucre bracts similar to the receptacular ones, but slightly broader and obtuse.

*Fls. & Frts.* : September–October.

*Distrib.* : In rocky pools. Bombay; Pune (Sant. *op.cit.*); Sindhudurg.

**E. infirmum** Steud. Syn. Pl. Glum. 2: 272. 1855; Moldenke in Sald. & Nicols. Fl. Hassan Dt. 653. 1978 (Repr.ed.). *E. gracile* Mart. in Wall. Pl. Asiat. Rar. 3: 79. 1832; Fyson in J. Indian Bot. 2: 264, t. 19. 1921; Sant. in Rec. Bot. Surv. India 16(1): 297. 1967 (3rd Rev. ed.).

Annuals. Leaves 1.2–3.0 x 0.3 cm, tapering to the acute apex. Scapes 20–30 cm long, slender. Heads c 0.6 cm across, globose, snow-white; involucre pale yellow, pubescent; floral bracts acute or



*Eriocaulon lanceolatum* Miq. ex Steud. var. *pilosum* Moldenke  
 1. Habit 2. Female flower 3. Seed 4. Female bract

cuspidate, dar  
 narrow; petals  
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Illus. : F

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*E. lance*  
 f. Fl. Brit.  
 (Repr. ed.); F

1. Peduncles

1. Peduncles

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cuspidate, darkish, pubescent. Female flowers: sepals boat-shaped, narrow; petals broadly oblanceolate, unequal, longer than sepals. Male flowers normal.

*Fls. & Frts.* : September–October.

*Illus.* : Fyson, *op.cit.*

*Distrib.* : In wet rice-fields. Bombay; Pune (Sant. *op.cit.*).

***E. lanceolatum*** Miq. ex Steud. Syn. Pl. Glum. 2: 271. 1855; Hook. f. Fl. Brit. India 6: 577. 1893; Cooke, Fl. Pres. Bombay 3: 357. 1958 (Repr. ed.); Fyson in J. Indian Bot. 2: 266, t. 23. 1921.

1. Peduncles glabrous

... var. *lanceolatum*

1. Peduncles pilose or villous

... var. *pilosum*

var. ***lanceolatum***.

Herbs, 8–16 cm tall. Scapes slender, 12.5–15.0 cm long. Leaves c 6.2 x 0.6 cm at the widest, linear-lanceolate, acute. Heads 0.6 cm across, subglobose, white; floral bracts short, darkish, obcuneate, but overtopped by the female sepals which are longer and visible beyond them. Female petals shorter or longer than sepals, oblanceolate, often always unequal in length. Seeds oval, dark brown.

*Fls. & Frts.* : August–November.

*Illus.* : Fyson, *op. cit.*

*Distrib.* : Infrequent in moist situations, in plains. Sindhudurg.

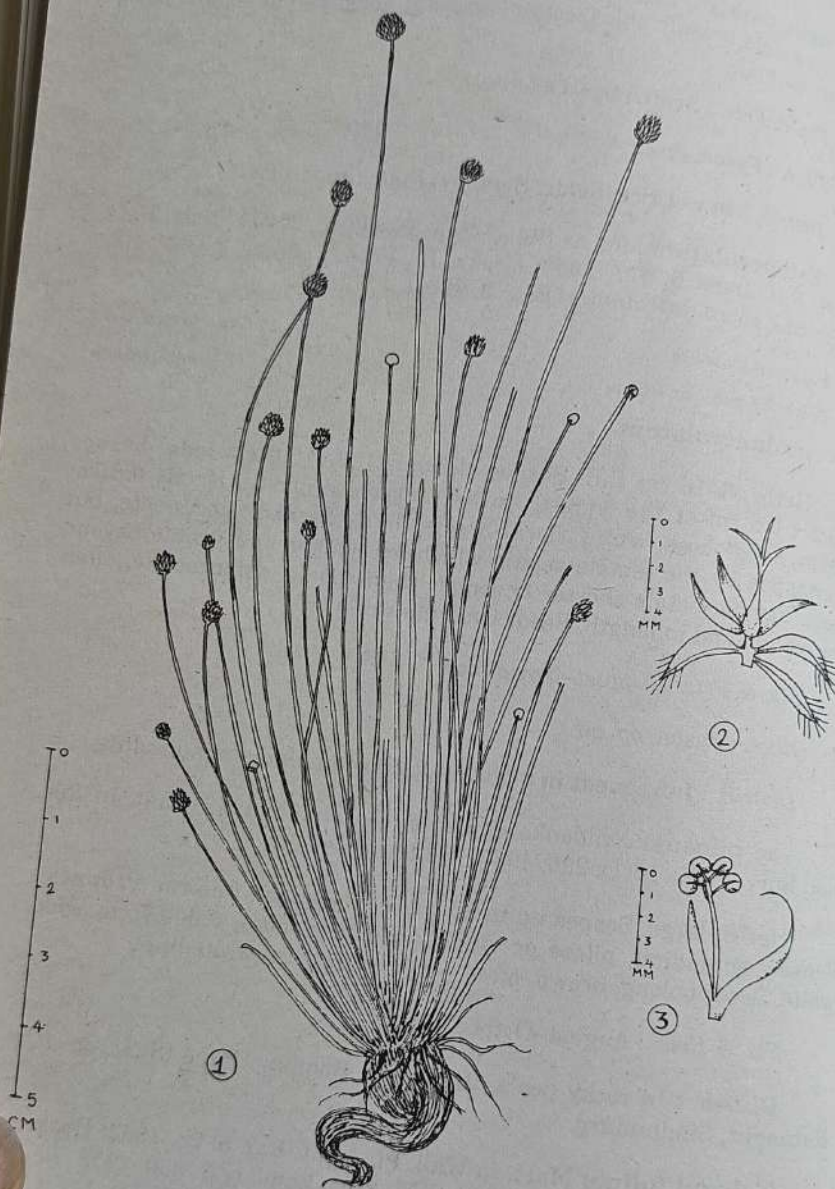
var. ***pilosum*** Moldenke in Phytologia 3: 164. 1949; Sant. in Rec. Bot. Surv. India 16(1): 296. 1967 (3rd Rev. ed.).

Herbs, large. Scapes up to 30 cm long, slender, filiform. Peduncles densely spreading, pilose or villous. Heads globose, 0.6–0.7 cm wide, white. Seeds oblong, brown, often with fine vertical white lines.

*Fls. & Frts.* : August–October.

*Distrib.* : In rocky pools. Bhandara; Bombay; Pune (Sant. *op.cit.*); Ratnagiri; Sindhudurg.

***E. luzulifolium*** Mart. in Wall. Pl. Asiat. Rar. 3: 28. 1832; Hook. f. Fl. Brit. India 6: 582. 1893; Cooke, Fl. Pres. Bombay 3: 360. 1958 (Repr. ed.); Fyson in J. Indian Bot. 2: 200, t. 8. 1921; Naik, *Ibid.* 52: 111, f. 3. 1973.



*Eriocaulon h. margaretae* Fyson  
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Herbs, 10–20 cm tall. Leaves 5–10 cm long, narrowed from the 0.4 cm base, linear, flat, many-nerved; sheaths c as long as the leaves. Scapes many, 2–3 times as long as the leaves, slender. Heads c 0.6 cm across, obconic or globose, truncate, clasped below by the light brown obtuse saucer-shaped involucre; floral bracts dark with white hairs, making the heads grey. Sepals and petals 3, narrow. Seeds ellipsoid.

*Fls. & Frts.* : September–November.

*Illus.* : Fyson, *op. cit.*; Naik, *op. cit.*

*Distrib.* : In wet rice-fields. Amaravati; Kolhapur; Nagpur; Nanded; Osmanabad; Ratnagiri; Sindhudurg.

**E. margaretae** Fyson in J. Indian Bot. 2: 316. 1921; Kulkarni & Desai in J. Bombay nat. Hist. Soc. 69: 233. 1972.

Herbs, c 10 cm high, annual, erect. Leaves basal, 3–5 cm long, apiculate. Peduncles 5–10 cm long, slender. Scapes many. Heads c 0.15 cm long, ovoid-ellipsoid or conical. Male flowers few; female flowers many. Capsules 3-seeded. Seeds ellipsoid, red.

*Fls. & Frts.* : August–November.

*Illus.* : Lakshminarasimhan & Sharma, Fl. Nasik Dt. 493, f. 41. 1991.

*Distrib.* : In wet rice fields. Ahmednagar; Kolhapur; Nasik; Pune; Satara; Sindhudurg.

**E. melaleucum** Mart. in Wall. Pl. Asiat. Rar. 3: 28. 1832; Hook. f. Fl. Brit. India 6: 574. 1893; Fyson in J. Indian Bot. 3: 18. 1922.

Herbs, 6–13 cm high, annual. Leaves 2.5–5.0 cm long, linear, subulate or acuminate, 3–7-nerved; sheaths twice as long as leaves. Peduncles solitary or few, 7.5–15.0 cm long. Heads 0.4–0.6 cm across; involucre bracts black, obtuse; floral acuminate, black, thickly bearded. Sepals and petals 3 each. Seeds elliptic, black.

*Fls & Frts.* : August–September.

*Distrib.* : A few along crest of Ghats. Ratnagiri; Satara.

**E. minutum** Hook. f. Fl. Brit. India 6: 579. 1893; Cooke, Fl. Pres. Bombay 3: 359. 1958 (Repr. ed.); Fyson in J. Indian Bot. 2: 317, t. 36. 1921.

Herbs, densely tufted, reaching 8 cm long. Leaves 1.2–2.0 cm long, from a broad, 3–5 nerved base, linear. Scapes numerous, slender, 3.7–6.2 cm long. Heads obconic; involucre bracts 0.33 cm long, scarious,

elliptic-acute and covering the floral; floral bracts oblong, acute. Seeds oblong-elliptic, reddish-brown.

*Fls. & Frts.* : September–December.

*Illus.* : Fyson, *op. cit.*

*Distrib.* : In wet rice fields. Ahmednagar; Kolhapur; Pune; Raigad; Ratnagiri; Satara; Sindhudurg.

*E. miserum* Koern. var. *mitophyllum* (Hook. f.) Fyson in J. Indian Bot. 3: 15, t. 48. 1922. *E. mitophyllum* Hook. f. Fl. Brit. India 6: 675. 1893.

Herbs, densely tufted. Leaves filiform, 2–4 x 0.13 cm. Heads c 0.4 cm across, hemispheric, black; involucre bracts obovate-oblong; floral bracts obovate. Male flowers: sepals free; petals unequal. Female flowers: sepals 2, large, concave, 1 small, flat; petals oblanceolate, villous.

*Fls. & Frts.* : July–September.

*Illus.* : Fyson, *op. cit.*

*Distrib.* : Rare in drying rice fields. Satara; Sindhudurg (S.M. Almeida, Fl. Savantwadi 2: 65. 1990).

*E. nepalense* Presc. ex Bong. in Acta Acad. Petrop. Sci. Math. 4, 1: 610. 1831; Hook. f. Fl. Brit. India 6: 581. 1893 *p.p.*; Fyson in J. Indian Bot. 2: 198, t. 6. 1921; Kulkarni & Desai in J. Bombay nat. Hist. Soc. 69: 232. 1972.

Herbs, tufted; stems short or absent. Leaves 5.0–7.5 cm long, tapering from 0.33–0.6 cm base, linear, flaccid, flat, apex acute. Scapes many, twice as long as leaves. Heads 0.43–0.6 cm across, nearly globular when mature, grey; involucre bracts black, acute; floral bracts finely hairy. Sepals 3, all boat-shaped; female petals narrow, hairy. Seeds oblong with papillose ribs.

*Fls. & Frts.* : August–September.

*Illus.* : Fyson, *op. cit.*

*Distrib.* : Rare in paddy fields. Kolhapur.

*E. nilagirens* Steud. Syn. Pl. Glum. 2: 271. 1851. *E. brownianum* var. *nilagirens* (Steud.) Fyson in J. Indian Bot. 2: 263. 1921. *E. brownianum* Mart. in Wall. Pl. Asiat. Rar. 3: 25, t. 248. 1832; Hook. f. Fl. Brit. India 6: 576. 1893; Fyson, *op. cit.*

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Herbs, tall. Leaves 37.5–50.0 x 0.6 cm, linear or ensiform, acuminate, glabrous or hairy. Scapes c as long as leaves, ribbed, deeply grooved, glabrous or hairy. Heads 0.75–2.5 cm across, flat or hemispheric, snow-white; involucre pale or black, glabrous or hairy. Female flowers: sepals dark, deeply boat-shaped, scabrid on keel; petals narrow, with long hairs and large glands. Seeds oval, dark brown.

*Illus.* : Fyson, *op.cit.* f. on page 263.

*Distrib.* : Rare. Satara.

*E. odoratum* Dalz. in Hook. Kew. J. Bot. 3: 280. 1851; Hook. f. Fl. Brit. India 6: 574. 1893; Cooke, Fl. Pres. Bombay 3: 355. 1958 (Repr. ed.); Fyson in J. Indian Bot. 2: 308, t. 24. 1921.

Herbs; stems disciform. Leaves 2.5–7.5 x 0.33 cm at base and narrowed to acuminate apex. Scapes filiform, 15–25 cm long, deeply grooved. Heads 0.43–0.6 cm across, subglobose, snow-white; bracts cuspidately acuminate. Sepals of female flowers 3 or 2 only; female petals with large glands.

*Fls. & Frts.* : August–November.

*Illus.* : Fyson, *op. cit.*

*Distrib.* : In stagnant waters. Ratnagiri; Satara; Sindhudurg.

*E. oryzetorum* Mart. in Wall. Pl. Asiat. Rar. 3: 28. 1832; Hook. f. Fl. Brit. India 6: 579. 1893; Fyson in J. Indian Bot. 2: 312, t. 32. 1921.

Herbs, annual. Leaves 5.0–7.5 x 0.43 cm, ensiform, spongy, narrowed to a truncate coriaceous tip. Scapes several, slender, 30.0–42.5 cm long. Heads c 0.75 cm across, straw-coloured; involucre bracts blunt; floral acuminate, scabrid. Flowers normal. Seeds minute, pale yellow, smooth.

*Illus.* : Fyson, *op.cit.*

*Distrib.* : Thane.

*E. polycephalum* Hook. f. Fl. Brit. India 6: 573. 1893; Moldenke in Phytologia 19: 351. 1970; Kulkarni & Desai in J. Bombay nat. Hist. Soc. 69: 233. 1972. *E. longicuspis* Hook. f. var. *polycephala* (Hook. f.) Fyson in J. Indian Bot. 2: 305. 1921.

Herbs, annual, tufted; stems disciform. Leaves c 7.5 cm long, linear-ensiform. Scapes numerous, 20–30 cm long. Heads 0.6–1.2 cm across; involucre and floral bracts obovate. Male sepals 3; petals spatulate.

*Fls. & Frts.* : July–November.

*Illus.* : Fyson, *op.cit.* f. on page 309.

*Distrib.* : Kolhapur; Ratnagiri.

**E. quinquangulare** L. Sp. Pl. 87. 1753; Hook. f. Fl. Brit. India 8: 582. 1893; Cooke, Fl. Pres. Bombay 3: 361. 1958 (Repr. ed.); Fyson in J. Indian Bot. 2: 204, t. 9. 1921; Kulkarni & Desai in J. Bombay nat. Hist. Soc. 69: 232. 1972.

Herbs; stems short or absent. Leaves 2.5–5.0 cm long, narrowed from c 0.6 cm base, flat. Scapes numerous, 7.5–12.5 cm long, slender. Heads 0.5–0.6 cm across, globular or often conical, black, grey or white; involucre light brown, reflexed. Flowers normal; sepals flat. Seeds ellipsoid, pale brown.

*Fls. & Frts.* : September–June.

*Illus.* : Fyson, *op.cit.*; Gandhi in Sald. & Nicols. Fl. Hassan Dt. 651, f. 109, A–Ac. 1976; Ugemuge, Fl. Nagpur Dt. t. 164. 1986.

*Distrib.* : In marshes. Amaravati; Bombay; Chandrapur; Kolhapur; Nagpur; Pune; Raigad; Satara; Sindhudurg; Thane; Yavatmal.

**E. ritchieanum** Ruhl. in Engl. Pflanzenr. 4(30): 73. 1903; Cooke, Fl. Pres. Bombay 3: 362. 1958 (Repr. ed.); Fyson in J. Indian Bot. 3: 16. 1922; Kulkarni & Desai in J. Bombay nat. Hist. Soc. 69: 233. 1972. *E. horsley-kundae* Fyson, *op. cit.* 13, t. 43.

Herbs. Leaves 3–5 x 0.3 cm at the base, linear, 4–7-nerved. Peduncles 1–many, 8–16 cm long. Heads c 0.6 cm across, globose, white villous; floral bracts black, covered with white hairs. Flowers 3–merous, normal. Seeds subglobose, brown, angular.

*Fls. & Frts.* : August–November.

*Illus.* : Fyson, *op. cit.*

*Distrib.* : Ahmednagar; Kolhapur; Pune; Satara; Sindhudurg; Thane.

*Notes* : Cooke (*op. cit.*) treated this as an imperfectly known species as he had not seen any specimen.

**E. robusto-brownianum** Ruhl. in Engl. Pflanzenr. 4(30): 77. 1903; Cooke, Fl. Pres. Bombay 3: 363. 1958 (Repr. ed.); Fyson in J. Indian Bot. 2: 264, t. 18. 1921; Naik, *Ibid.* 52: 111. 1953. *E. rhodae* Fyson, *op. cit.* f. on page 265. *E. mysorensis* Fyson in Kew Bull. 1914: 331. 1914.

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Herbs, robust, annual. Leaves half as long as scapes, linear-ensiform. Scapes 20–40 cm long, stout. Head 1.2–2.0 cm across, globose, snow-white; involucre bracts obovate; floral bracts acuminate, covered with thick white hairs, giving the head a white echinulate appearance. Female petals hairy, narrow at the base, with large glands. Seeds subglobose, red-brown.

*Fls. & Frts.* : October–November.

*Illus.* : Fyson, *op. cit.*; Gandhi in Sald. & Nicols. Fl. Hassan Dt. 651, f. 109, B–Bd. 1976.

*Distrib.* : Rare in moist, open situations along ghats. Kolhapur; Sindhudurg.

*Notes* : Cooke (*op. cit.*) reported that he had not seen any specimen and hence he kept it under 'Imperfectly known species'. Naik (1973) confirmed its occurrence in Ratnagiri District, Maharashtra.

**E. santapaui** Moldenke in Phytologia 3: 163. 1949; Sant. in Rec. Bot. Surv. India 16(1): 296. 1967 (3rd Rev. ed.).

Herbs, acaulescent. Leaves basal, rosulate, membranous, c 4.0 x 0.3 cm at the mid-point, acute at apex; sheaths lax, green, 1.8–2.8 cm long. Heads 0.25–0.3 cm in diam., stramineous, hemispheric; involucre bracts few, elliptic; receptacular bracts brownish, obovate.

*Fls. & Frts.* : September–November.

*Distrib.* : In streams. Pune (Sant. *op. cit.*).

**E. sedgwickii** Fyson in J. Indian Bot. 2: 260, t. 16. 1921; Kulkarni & Desai in Bombay nat. Hist. Soc. 69: 283. 1972.

Herbs, slender, annual; stems short. Leaves thin, 7–15 x 0.3 cm, linear. Peduncles 15–20 cm long. Heads globose, snow-white, densely pilose; involucre bracts black; floral bracts rhomboid-cuneate. Male flowers: sepals 2, angustate; petals 3, provided with large glands. Female flowers: sepals 2, angustate; petals 3, broad-lanceolate, provided with large glands. Seeds oblong-elliptic, reddish-brown.

*Fls. & Frts.* : September–November.

*Illus.* : Fyson, *op. cit.*

*Distrib.* : Bombay; Kolhapur; Raigad; Satara; Sindhudurg.

**E. setaceum** L. Sp. Pl. 870. 1753; Hook. f. Fl. Brit. India 6: 572. 1893; Cooke, Fl. Pres. Bombay 3: 354. 1958 (Repr. ed.); Fyson in J. Indian Bot. 2: 193, t. 1. 1921. *E. capillus-naiadis* Hook. f. *op. cit.*

Herbs. Leaves 2-5 cm long, linear. Scapes fasciculate, twisted. Heads c 0.4 cm across, subglobose, dark brown and glabrous or pale-green and white-puberulous at apex; involucral bracts obovate or suborbicular; floral bracts obovate, cuneate. Male flowers: sepals 3, free or nearly so; corolla lobes small. Female flowers: sepals 3, boat-shaped; petals 3, oblanceolate with distinct glands. Seeds oblong, brown.

*Fls. & Frts.* : September-December.

*Illus.* : *Fyson, op. cit.*

*Distrib.* : Stems submerged, peduncles emerging from ponds. Ratnagiri; Satara.

*E. sexangulare* L. Sp. Pl. 87. 1753; Hook. f. Fl. Brit. India 6: 580. 1893; Cooke, Fl. Pres. Bombay 3: 359. 1958 (Repr. ed.); *Fyson in J. Indian Bot.* 2: 318, t. 39 & 40. 1921.

Herbs, tufted. Leaves 10-30 x 0.33-2.0 cm, linear, many ribbed, flat. Scapes many, up to 45 cm long, stiff. Heads c 0.75 cm across or less, hemispherical or conical with a truncate base; involucral bracts pale, shining; floral bracts obovate, cuspidate. Female sepals 2 boat-shaped, one flat or absent; petals linear. Seeds flat, ovate or subglobose with parallel dark lines and covered with peltate hairs.

*Fls. & Frts.* : October-February.

*Illus.* : *Fyson, op. cit.*

*Distrib.* : In wet paddy fields. Ahmednagar; Sindhudurg.

*E. sollyanum* Royle, Ill. Pl. Himal. 409, t. 97, f. 1. 1839. *E. trilobum* Buch.-Ham. ex Koern. in Linnaea 27: 645. 1856; Hook. f. Fl. Brit. India 6: 583. 1893; Cooke, Fl. Pres. Bombay 3: 361. 1958. (Repr. ed.); *Fyson in J. Indian Bot.* 2: 206, t. 10. 1921.

Herbs, scapigerous. Leaves linear. Scapes 6-15 cm long. Heads 0.3-0.5 cm across, dark; involucral bracts linear-oblong; floral bracts cuneate-obovate. Male flowers: sepals 3, oblong; petals spathulate. Female flowers: sepals 3, oblanceolate; petals free. Seeds oblong, dark brown.

*Fls. & Frts.* : September-November.

*Illus.* : *Fyson, op. cit.*

*Distrib.* : Bombay; Kolhapur; Nagpur; Pune; Raigad; Sindhudurg.

*E. stellulatum* Koern. in Linnaea 27: 620. 1856; Hook. f. Fl. Brit. India 6: 579. 1893; Cooke, Fl. Pres. Bombay 3: 358. 1958 (Repr. ed.);

*Fyson in J. Indian Bot.* 2: 318, t. 39 & 40. 1921.

Herbs, slender. Scapes ensiform. Heads across, globose reflexed; floral bracts hairy. Male flowers

*Fls. & Frts.*

*Illus.* : *Fyson, op. cit.*

*Distrib.* : Pune; Satara.

*E. thwaitii* Hook. f. Fl. Brit. India 6: 583.

Herbs, many, 2.5-15 cm long, later truncate, greenish, many smaller or base. Seeds

*Fls. & Frts.*

*Illus.* : *Fyson, op. cit.*

777. 1982.

*Distrib.*

*E. truncatum* Hook. f. Fl. Brit. India 6: 583. 1893; Cooke, Fl. Pres. Bombay 3: 361. 1958. (Repr. ed.); *Fyson in J. Indian Bot.* 2: 206, t. 10. 1921.

Herbs, from the base. Involucral bracts narrow, 2-3 mm long, acute; petals

*Fls. & Frts.*

*Illus.* : *Fyson, op. cit.*

Carnatic 4: 1921.

*Distrib.* : Nagpur; Raigad; Sindhudurg.

Fyson in J. Indian Bot. 2: 317. 1921; Kulkarni & Desai in J. Bombay nat. Hist. Soc. 69: 233. 1972.

Herbs, slender, annual. Leaves broad and thin, 5.0–7.5 cm, linear-ensiform. Scapes several, slender, 7.5–15.0 cm long. Heads c 0.75 cm across, globose, stellately echinate; involucre bracts lanceolate-acute, reflexed; floral bracts similar, spreading, much longer than the flowers. Female sepals 2, strongly crested on the back; petals 3, oblanceolate, hairy. Male flowers normal, trimerous. Seeds oblong, dark brown.

*Fls. & Frts.* : September–December.

*Illus.* : Fyson, *op. cit.* f. on page 319.

*Distrib.* : In moist places near ponds. Ahmednagar; Kolhapur; Pune; Satara; Sindhudurg; Thane.

*E. thwaitesii* Koern. in Linnaea 27: 627. 1856; Hook. f. Fl. Brit. India 6: 583. 1893; Fyson in J. Indian Bot. 2: 202. f. 1921.

Herbs. Leaves 1.2–5.0 x 0.3–0.5 cm, oblong, acute, flat. Scapes many, 2.5–15.0 cm long. Heads 0.18–0.75 cm across, at first obconic, later truncate, dark grey; involucre bracts obtuse, pale; floral bracts greenish, margins scarious. Female sepals 3, equal and boat-shaped or 1 smaller or 2 only; petals 3, slender and bearing long hairs from near base. Seeds oblong, brown.

*Fls. & Frts.* : September–November.

*Illus.* : Fyson, *op. cit.*; Matthew, *Illus. Fl. Tamilnadu Carnatic* 2: t. 777. 1982.

*Distrib.* : Satara (Fyson in J. Indian Bot. 3: 95. 1922).

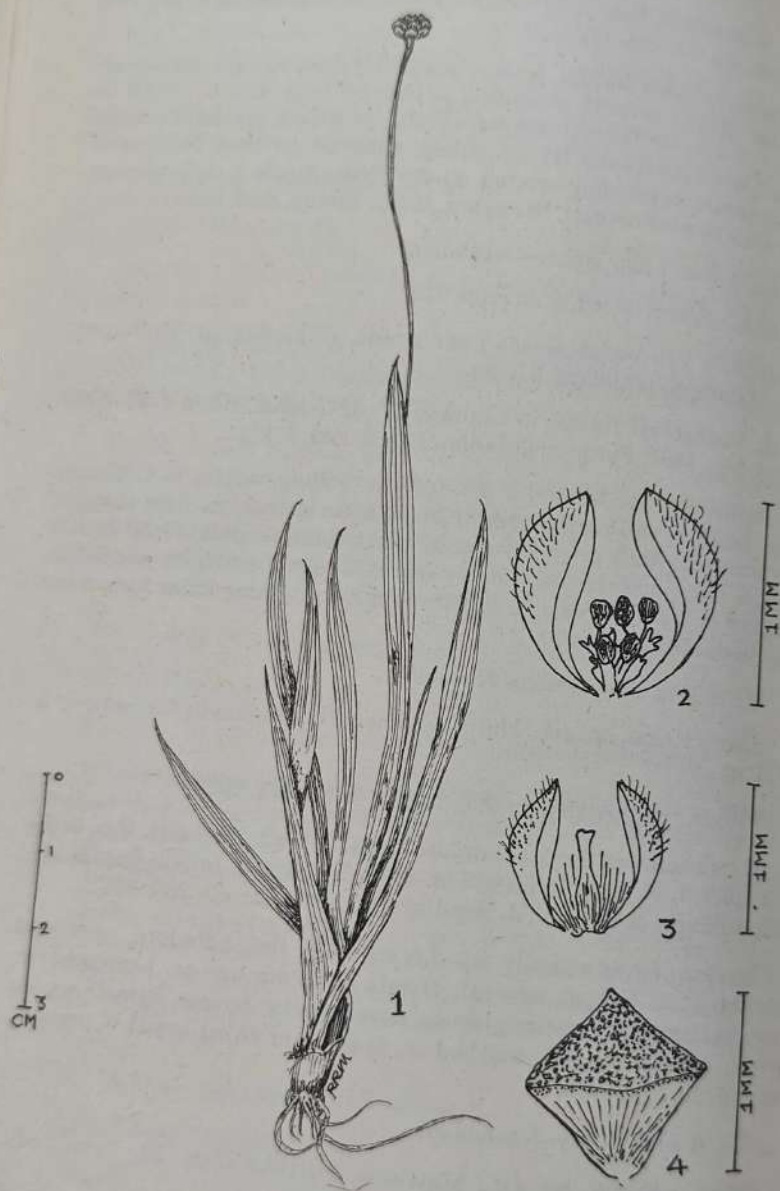
*E. truncatum* Buch.–Ham. ex Mart. in Wall. Pl. Asiat. Rar. 3: 29. 1832; Hook. f. Fl. Brit. India 6: 578. 1893; Fyson in J. Indian Bot. 2: 199. 1921; Kulkarni & Desai in J. Bombay nat. Hist. Soc. 69: 239. 1972.

Herbs. Leaves usually 2.5–7.5 cm long, flat, subulate, narrowed from the base. Scapes several. Heads c 0.3 cm across, hemispheric; involucre bracts elliptic or globose; floral bracts obovate. Female sepals narrow, 2 boat-shaped, toothed at apex, and third sepal if present acute; petals 3, narrow.

*Fls. & Frts.* : July–November.

*Illus.* : Fyson, *op. cit.*; Matthew, *Further Illus. Fl. Tamilnadu Carnatic* 4: t. 622. 1988.

*Distrib.* : In marshy places near ponds. Chandrapur; Kolhapur; Nagpur; Raigad; Ratnagiri.



*Eriocaulon vanheurckii* Muell.-Arg. f. *minima* Moldenke  
1. Habit 2. Male floret 3. Female floret 4. Bract.

*E. tuberiferum*  
Soc. 71: 81, t. 1974.

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& Desai, op. cit.).

*E. vanheurckii*  
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1. Herbs very small
1. Herbs much taller

f. *vanheurckii*

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f. *minima*  
Surv. India 16(1)

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*E. tuberiferum* A.R. Kulkarni & Desai in J. Bombay nat. Hist. Soc. 71: 81, t. 1974.

Herbs; tubers stalked, 5–15 per plant c 0.4 x 0.25 cm, oval or bilobed; stems reduced; leaves basal, rosulate, 1.6–4.3 cm long, 0.2–0.3 cm wide in the middle, linear-lanceolate, recurved, acute at apex; sheaths closely appressed to the peduncles, obliquely split at apex. Peduncles 1–2 (rarely 3) per plant, 11–18 cm long. Heads 0.3–0.7 cm in diam., globose, snow-white; involucre bracts many, lanceolate, black; receptacular bracts deep green. Male flowers numerous, both towards periphery and the centre of the head; female flowers few, restricted to the periphery of the head.

Fls. & Frts. : November.

Illus. : Kulkarni & Desai, *op. cit.*

Distrib. : Rare along the margins of puddles. Kolhapur (Kulkarni & Desai, *op. cit.*).

*E. vanheurckii* Muell.-Arg. in van Heurck. Obs. 2: 98. 1870; Sant. in Rec. Bot. Surv. India 16 (1): 297. 1967 (3rd Rev. ed.); Kulkarni & Desai in J. Bombay nat. Hist. Soc. 69: 232. 1972. *E. thomasi* Fyson in J. Indian Bot. 2: 318, t. 23. 1921; Sant. *op. cit.* 294.

1. Herbs very small

... f. *minima*

2. Herbs much taller

... f. *vanheurckii*

f. *vanheurckii*.

Stems tufted. Leaves 5.0–12.5 x 0.75 cm, lanceolate or oblanceolate, acute. Scapes twice as tall or less, thickened below the globose or truncate heads, which are white by the thickly puberulous exposed back of the floral bracts. Heads c 0.6 cm across. Sepals in both the sexes 2 only, deeply boat-shaped and thickened along the keel; female petals linear with long basal hairs. Seeds oblong, yellowish.

Fls. & Frts. : September–October.

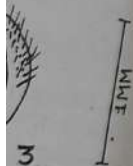
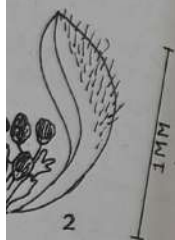
Illus. : Fyson, *op. cit.*

Distrib. : Bombay; Kolhapur; Pune; Raigad; Ratnagiri; Satara; Sindhudurg.

f. *minima* Moldenke in Phytologia 5: 84. 1955; Sant. in Rec. Bot. Surv. India 16(1): 297. 1967 (3rd Rev. ed.).

Fls. & Frts. : August.

Distrib. : Ahmednagar; Pune; Thane.



**E. wightianum** Mart. in Wall. Pl. Asiat. Rar. 3:28. 1832; Hook. f. Fl. Brit. India 6: 576. 1893; Cooke, Fl. Pres. Bombay 3: 356. 1958 (Repr. ed.); Fyson in J. Indian Bot. 2: 226, t. 21. 1921; Kulkarni & Desai in J. Bombay nat. Hist. Soc. 69: 233. 1972.

Herbs, 15–20 cm tall, annual, tufted. Leaves 7.5–12.5 x 1.2–2.0 cm, linear, slightly hairy. Scapes 15–25 cm long, slightly hairy. Heads c 1.2 cm across, globose, snow-white; involucre bracts obovate; floral bracts obovate, cuneate. Female petals ovate-lanceolate, distinctly clawed, spongy. Seeds reddish-brown.

Fls. & Frts. : September–October.

Illus. : Fyson, *op. cit.*

Distrib. : A few in grassy places. Kolhapur; Ratnagiri; Sindhudurg.

**E. xeranthemum** Mart. in Wall. Pl. Asiat. Rar. 3: 29. 1832; Hook. f. Fl. Brit. India 6: 584. 1893; Cooke, Fl. Pres. Bombay 3: 362. 1958 (Repr. ed.); Fyson in J. Indian Bot. 2: 200. 1921; Kulkarni & Desai in J. Bombay nat. Hist. Soc. 69: 232. 1972.

Herbs, tiny. Leaves up to 1.2 cm long, linear or lanceolate. Scapes 1.2–5.0 cm long. Heads c 0.4 cm across; involucre bracts glistening white; floral bracts broadly obovate, truncate, hairy at the tip. Female sepals narrow, 3, equal or unequal or 2 only. Seeds narrowly oblong, yellow, papillose.

Fls. & Frts. : August–November.

Illus. : Fyson, *op. cit.* f. on page 204.

Distrib. : In marshy places. Ahmednagar; Chandrapur, Kolhapur, Pune; Raigad; Sindhudurg.

#### IMPERFECTLY KNOWN SPECIES :

**E. bombayanum** Ruhl. in Engl. Pflanzenr. 4(30): 104. 1903; Cooke, Fl. Pres. Bombay 3: 362. 1958 (Repr. ed.); Fyson in J. Indian Bot. 3: 17. 1922.

Leaves 1.5–2.0 cm long, linear-lanceolate, acute. Peduncles numerous, 8–10 cm high. Heads densely white, puberulous; involucre bract greenish; floral bracts olive-black, oblong-obovate, acute. Sepals 2 only in both sexes; petals 3; female petals linear-oblong; anthers black.

Distrib. : Bombay (Cooke, *op. cit.* & Fyson, *op. cit.*).

**E. eurypeplon** Koern. in Linnaea 27: 685. 1856; Hook. f. Fl. Brit. India 6: 585. 1893; Cooke, Fl. Pres. Bombay 3: 363. 1958 (Repr. ed.); Fyson in J. Indian Bot. 3: 17. 1922.

FLO

Leaves 3–9 cm long  
Heads subglobose, 0.3–0.5 cm  
acute, olive-brown, pubescent  
acuminate. Receptacles black.

Distrib. : Konkan

**E. heterolepis** S. India 6: 585. 1893; Cooke, Fyson in J. Indian Bot.

Leaves c 5 cm long  
9–11-nerved. Peduncles  
subglobose, grey; involucre  
the inner shorter than the  
hairy. Sepals and petals  
shorter than the other

Distrib. : Bombay

**E. rouxianum** Bombay 3: 363. 1958

Herbs, acaulescent  
broad base. Heads  
erect, linear-oblong  
floral bracts obovate  
apex.

Distrib. : Bombay

**Trigutia** k  
4:18, fig. 1–6–199

Annual herb  
reduced. Leaves  
acute at apex, cuneate  
scapose, crowded  
1-nerved, leafy  
with red stamens  
female flowers;  
a solitary pistil  
ribs, stigmatic

## FLORA OF MAHARASHTRA STATE

Leaves 3-9 cm long. Peduncles crowded, 15-25 cm, 4-winged. Heads subglobose, 0.3-0.4 cm in diam.; involucral bracts broadly ovate, acute, olive-brown, puberulous on back; floral bracts rhombo-cuneate, acuminate. Receptacles villous. Sepals of both sexes 2; petals 3; anthers black.

*Distrib.* : Konkan (Cooke, *op. cit.* & Fyson, *op. cit.*).

*E. heterolepis* Steud. Syn. Pl. Glum. 271. 1855; Hook. f. Fl. Brit. India 6: 585. 1893; Cooke, Fl. Pres. Bombay 3: 363. 1958 (Repr. ed.); Fyson in J. Indian Bot. 3: 16. 1922.

Leaves c 5 cm long, lanceolate, obtuse from a broader base, 9-11-nerved. Peduncles many, 13 cm high. Heads 0.4-0.6 cm across, subglobose, grey; involucral bracts scarious, 2-seriate; outer deciduous, the inner shorter than the others; floral bracts olive-green, densely hairy. Sepals and petals 3; female sepals with a crest, one a little shorter than the others, linear.

*Distrib.* : Bombay (Cooke *op. cit.* & Fyson, *op. cit.*).

*E. rouxianum* Steud. Syn. Pl. Glum. 2: 270. 1855; Cooke, Fl. Pres. Bombay 3: 363. 1958 (Repr. ed.); Fyson in J. Indian Bot. 3: 18. 1922.

Herbs, acaulescent. Leaves 2.5-3.7 cm long, lanceolate from a broad base. Heads c 0.43 cm in diam.; involucral bracts herbaceous, erect, linear-oblong, obtuse, 1/4 longer than the white villous head; floral bracts obovate obtuse, ciliate. Sepals lanceolate, ciliate at the apex.

*Distrib.* : Bombay (Cooke *op. cit.* & Fyson *op. cit.*); Nasik.

## HYDATELLACEAE

## TRITHURIA Hook. f.

*Trighutia konkanensis* Yadav & M. K. Janarthanam in Rheede 4:18, fig. 1-6-1994.

Annual herbs, up to 1.3 cm high, green to red; roots fibrous; stems reduced. Leaves tufted, numerous, up to 12x 0.8 mm, linear, flattened, acute at apex, entire, 1-nerved, green to red. Capitula numerous, scapose, crowded among leaves; bracts 2, up to 5 x 0.6 mm, linear, 1-nerved, leaf-like. flowers unisexual, naked; male flowers solitary with red stamens, one per capitulum, at the centre, surrounded by female flowers; female flowers 15-20 per capitulum, each represented by a solitary pistil. Fruits up to 0.3 mm long, ovoid with three longitudinal ribs, stigmatic hairs persistent. Seeds translucent with dark tip.

*Fls. & Frts.* : September–October.

*Illus.* : Yadav & M. K. Janarthanam, *op. cit.*

*Distrib.* : Grows in temporarily inundated sandy-gravelly areas and in association with species of *Cyperus*, *Dimeria*, *Eriocaulon* and *Utricularia*. Sindhudurg (Yadav & M. K. Janarthanam, *op. cit.*).

*Notes.* : Hydatellaceae, so far thought to be restricted to Australia, Tasmania and New Zealand, has been reported for the first time in India (Yadav & Janarthanam, *op. cit.* p. p. 17–20)

### CYPERACEAE

- |   |     |                |
|---|-----|----------------|
| 1. Nuts enclosed in a bottle-shaped utricle with an entire or notched or shortly slit mouth | ... | CAREX          |
| 1. Nuts not enclosed in a utricle :   |     |                |
| 2. Flowers unisexual :  | ... |                |
| 3. Contra-ligule present  | ... | SCLERIA        |
| 3. Contra-ligule absent   | ... | DIPLACRUM      |
| 2. Flowers bisexual :   |     |                |
| 4. Flowering glumes 1 or 2  | ... | RHYNCHOSPORA   |
| 4. Flowering glumes many :  |     |                |
| 5. Flowering glumes spirally arranged :   |     |                |
| 6. Style-base constricted or articulate above the nut :                                     |     |                |
| 7. Leaves absent; hypogynous bristles present   | ... | ELEOCHARIS     |
| 7. Leaves present; hypogynous bristles absent :   |     |                |
| 8. Style-base persistent, or if deciduous then not leaving a tumour on the nut              | ... | FIMBRISTYLIS   |
| 8. Style-base deciduous leaving a tumour on the nut   | ... | BULBOSTYLIS    |
| 6. Style-base passing gradually into the nut :  |     |                |
| 9. Leaves reduced to sheaths  | ... | SCHOENOPLECTUS |
| 9. Leaves with well developed blades :  |     |                |
| 10. Hypogynous structures absent :  |     |                |

11. Annuals  
11. Perennials  
10. Hypogynous st  
12. Hypogyna  
linear seg  
12. Hypogyna  
13. Leav  
13. Leav  
14.  
14.  
5. Flowering glumes  
15. Styles entire  
15. Styles distin  
16. Styles  
17. R  
17. R  
1  
1  
16. Styles  
19. I  
19.  
Anospor  
159. 1876; Ly  
Vahl, Enum.  
1893; Sedgw  
Steenis, Fl. N

- |   |     |                 |
|---|-----|-----------------|
| 11. Annuals   | ..  | RIKLIELLA       |
| 11. Perennials  | ... | KYLLINGIELLA    |
| 10. Hypogynous structures present :                               |     |                 |
| 12. Hypogynal structures divided to the base into linear segments | ... | ERIOPHORUM      |
| 12. Hypogynal structures not divided into segments :              |     |                 |
| 13. Leaves with a collar around stem                              | ... | FUIRENA         |
| 13. Leaves without a collar around stem :                         |     |                 |
| 14. Hypogynal structures scaly, membranous                        | ... | LIPOCARPHA      |
| 14. Hypogynal structures setaceous                                | ... | SCIRPUS         |
| 5. Flowering glumes distichously arranged :                       |     |                 |
| 15. Styles entire or slightly notched at the top                  | ... | ANOSPORUM       |
| 15. Styles distinctly cleft into 2 or 3 stigmas :                 |     |                 |
| 16. Styles 2-fid :  |     |                 |
| 17. Rhachilla of spikelet deciduous                               | ... | KYLLINGIA       |
| 17. Rhachilla of spikelet persistent :                            |     |                 |
| 18. Nuts laterally compressed                                     | ... | PYCREUS         |
| 18. Nuts dorsally compressed                                      | ... | JUNCCELLUS      |
| 16. Styles 3-fid :  |     |                 |
| 19. Rhachilla of spikelets persistent :                           |     |                 |
| 20. Glumes smaller, c 0.2 cm long, membranous                     | ... | SOROSTACHYS     |
| 20. Glumes larger, not membranous                                 | ... | CYPERUS         |
| 19. Rhachilla of spikelets deciduous :                            |     |                 |
| 21. Stigmas 2   | ... | QUEENSLANDIELLA |
| 21. Stigmas 3 :   |     |                 |
| 22. Keel of nut-bearing glumes winged                             | ... | INDOCOURTOISIA  |
| 22. Keel of nut-bearing glumes not winged                         | ... | MARISCUS        |

## ANOSPORUM Nees

**Anosporum cephalotes** (Vahl) Kurz in J. Asiat. Soc. Beng. 65 : 159. 1876; Lye in Nord. J. Bot. 1: 186, f. 1. 1981. *Cyperus cephalotes* Vahl, Enum. Pl. 2: 311. 1805; C.B.Cl. in Hook. f. Fl. Brit. India 6: 597. 1893; Sedgw. in J. Bombay nat. Hist. Soc. 25: 686. 1918; Kern in Steenis, Fl. Males. 1, 7: 633, f. 61 & 62. 1974.

Perennials, floating; rhizomes with slender stolons rooting at nodes; culms solitary, 15–50 x 0.1–0.2 cm. Leaves 10–50 x 0.2–0.4 cm, rather rigid, canaliculate at base, otherwise flat, gradually narrowed into the triquetrous and scabrid apex. Inflorescence an ovoid or conical congested head, 0.5–1.5 cm in diam., consisting of 1–4 crowded spikes. Spikelets many, 0.4–1.0 x 0.25–0.4 cm, ovate or lanceolate. Nutlets 0.1–0.15 x 0.07–0.1 cm, triangular, ovoid, shining, brown.

*Illus.* : Kern in Steenis, *op. cit.*; Lye, *op. cit.*

*Distrib.* : Maharashtra (Karthik. *et al.* 1981).

#### BULBOSTYLIS Kunth (*nom. cons.*)

- |  |     |                         |
|--|-----|-------------------------|
| 1. Spikelets solitary                            | ... | <i>B. densa</i>         |
| 1. Spikelets 3–20, congested in a head :         |     |                         |
| 2. Stems glabrous; heads smooth; glumes keeled   | ... | <i>B. barbata</i>       |
| 2. Stems hairy; heads prickly; glumes not keeled | ... | <i>B. subspinescens</i> |

**Bulbostylis barbata** (Rottb.) C.B.Cl. in Hook. f. *Fl. Brit. India* 6: 651. 1893; Blatt. in *J. Bombay nat. Hist. Soc.* 37:765. 1935; Kern in Steenis, *Fl. Males.* 1, 7: 539. 1974. *Scirpus barbatus* Rottb. *Progr.* 27. 1722 & *Descr. Ic. Pl.* 52, t. 17, f. 4. 1773. *Stenophyllus barbata* (Rottb.) T. Cooke, *Pl. Pres. Bombay* 2: 887. 1908 [3: 401. 1958 (Repr. ed.)].

Herbs, c 5 cm high. Bracts 3, foliaceous, equalling or longer than inflorescence. Spikelets c 0.5 cm long; glumes c 0.2 cm long, greenish-brown, aristate, hispid, lower empty; stigmas 3. Nuts obovoid, shortly stipitate, 0.5–0.6 cm long, pale brown.

*Fls. & Frts.* : May–October.

*Illus.* : A.S. Rao & Verma, *Cyp. N.E. India*, 33, f. 21–21b. 1982; Matthew, *Illus. Fl. Tamilnadu Carnatic* 2: t. 778. 1982.

*Distrib.* : Akola; Amaravati; Chandrapur; Kolhapur; Nagpur; Osmanabad; Satara; Sindhudurg; Thane.

**B. densa** (Wall.) Hand.-Mazz. in Karsten & Schenk, *Vegetationsb.* 20(7): 16. 1930; Kern in Reinwardtia 6: 51. 1961 & Steenis, *Fl. Males.* 1, 7: 538. 1974. *Scirpus densus* Wall. in Roxb. *Fl. Ind.* 1: 231. 1820. *Bulbostylis capillaris* Kunth var. *trifida* (Nees) C.B.Cl. in Hook. f. *Fl. Brit. India* 6: 652. 1893.

Delicate, tufted, annual herbs. Leaves glabrous; sheaths hairy. Spikelets few, solitary, elliptic, c 0.3 cm across; glumes dark brown, broadly ovate, laxly imbricate. Nuts obovate, triquetrous, verruculose.

*Fls. &*  
*Illus.*  
Matthew, F

*Distrib.*

*B. sub*

Herbs  
the stem. S  
bracts c as

*Fls. &*

*Distrib.*

1. Spikes lo

1. Spikes sh

2. Fern

3.

3.

2. Fern

4.

4.

Care:  
Cl. in Hook  
Soc. 38: 9.

Herbs  
ovate-oblo  
triquetrous

*Fls. &*

*Illus.*

*Distrib.*  
Ratnagiri;

C. ca  
Bot. 7: 602

*Fls. & Frts.* : September–November.

*Illus.* : A.S. Rao & Verma, Cyp. N.E. India 33, f. 22–22b. 1982; Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 623. 1988.

*Distrib.* : Ahmednagar; Kolhapur; Pune; Raigad; Satara.

*B. subspinescens* C.B.Cl. in Hook. f. Fl. Brit. India 6: 652. 1893.

Herbs; stems c 10 cm high, rigid, curved. Leaves as long as 1/3 of the stem. Spikelets c 0.8 cm long, hard, almost stellately spreading; bracts c as long as the head; glumes densely spreading.

*Fls. & Frts.* : July–September.

*Distrib.* : Nagpur.

#### CAREX L.

- |   |     |                    |
|---|-----|--------------------|
| 1. Spikes long-cylindric, peduncles solitary  | ... | <i>C. baccans</i>  |
| 1. Spikes short, numerous :   |     |                    |
| 2. Female glumes aristate :   |     |                    |
| 3. Glumes straw-colored   | ... | <i>C. indica</i>   |
| 3. Glumes purplish-brown  | ... | <i>C. caricina</i> |
| 2. Female glumes acute or mucronate :   |     |                    |
| 4. Female glumes mucronate or mucronulate; styles swollen at the base; utricles slightly to strongly inflated | ... | <i>C. cruciata</i> |
| 4. Female glumes acute; styles uniformly slender; utricles not or scarcely inflated                           | ... | <i>C. caricina</i> |

*Carex baccans* Nees in Wight, Contrib. Bot. Ind. 122. 1834; C.B. Cl. in Hook. f. Fl. Brit. India 6: 722. 1894; Blatt. in J. Bombay nat. Hist. Soc. 38: 9. 1935; Nelmes in Reinwardtia 1: 322. 1951.

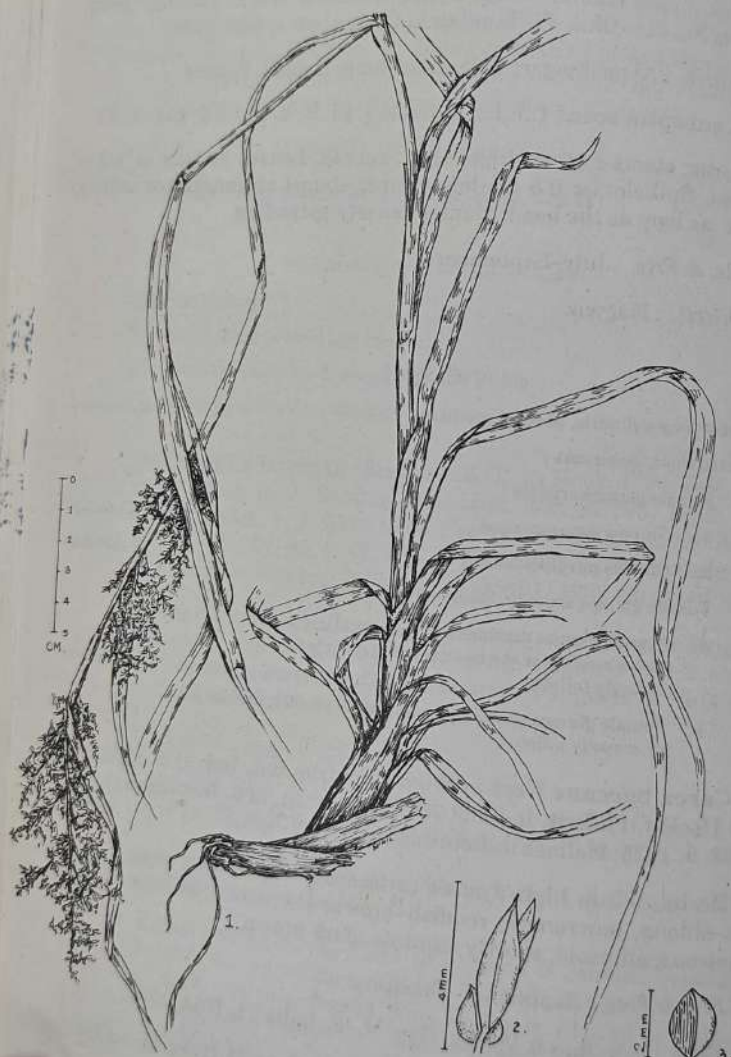
Herbs, 1–2 m high. Leaves coriaceous, longer than stem. Glumes ovate-oblong, mucronate, reddish-brown; stamens 3; stigmas 3. Nuts triquetrous, ellipsoid, shortly stipitate, dark brown.

*Fls. & Frts.* : September–February.

*Illus.* : A.S. Rao & Verma, Cyp. N.–E. India 71, f. 54. 1982.

*Distrib.* : Occasional in shade of shrubs and trees along Ghats. Ratnagiri; Satara.

*C. caricina* (D. Don) Ghildyal & Bhattacharyya in J. Econ. Tax. Bot. 7: 602. 1985. *Cyperus caricinus* D. Don, Prodr. Fl. Nepal. 39. 1825.



*Carex cruciata* Wahlenb.  
1. Habit 2. Spikelet 3. Nut

*Carex filicina*  
*meiogyne* (Nees)  
1894. *C. contin*

1. Female glume
1. Female glume

var. *caric*

Herbs; rh  
linear, length  
more or less 3—

Fls. & Fr

Illus. : M  
(*Carex filicina*)

Distrib. :

var. *glau*

Bot. 7: 602. 19  
in Sald. & Ni  
C.B.Cl. in Hoo  
1855. *C. merca*  
Hook. f. op. ci  
*filicina* var. *gl*  
274. 1909; San

Herbs, f  
multistriate,  
terminal pani  
shortly stipita

Fls. & Fr

Illus. : H  
Further Illus.

Distrib. :  
Satara; Sindh

*C. cruci*  
149. 1803; C.  
Bombay nat. I  
*C. condensata*  
Hook. f. op. c  
*Lavicha Gavo*

*Carex filicina* Nees in Wight, Contrib. Bot. Ind. 23. 1834 (incl. var. *meiogyne* (Nees) Strachey); C.B.Cl. in Hook. f. Fl. Brit. India 6: 717. 1894. *C. continua* C.B.Cl. in Hook. f. op.cit. p.p.

1. Female glumes aristate

... var. *glaucina*

1. Female glumes acute

... var. *caricina*

var. *caricina*.

Herbs; rhizomes woody, short. Leaves as long as stems. Spikes linear, lengthening in fruit, redish brown. Nuts narrowly lanceolate, more or less 3-5-angled.

Fls. & Frts. : July-August.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 779. 1982 (*Carex filicina*).

Distrib. : Ahmednagar; Nagpur.

var. *glaucina* (Boeck.) Ghildyal & Bhattacharyya in J. Econ. Tax. Bot. 7: 602. 1985. *C. glaucina* Boeck. in Linnaea 40: 353. 1876; Hooper in Sald. & Nicols. Fl. Hassan Dt. 660. 1976. *C. mercarensis sensu* C.B.Cl. in Hook. f. Fl. Brit. India 6: 719. 1894 p.p. non Hochst. ex Steud. 1855. *C. mercarensis* var. *major* Steud. Syn. Cyp. 194. 1855; C. B. Cl. in Hook. f. op. cit.; Cooke, Fl. Pres. Bombay 3: 421. 1958 (Repr. ed.). *C. filicina* var. *glaucina* (Boeck.) Kuekenth. in Engl. Pflanzenr. 4. 20, 38: 274. 1909; Sant. in Rec. Bot. Surv. India 16 (1): 303. 1967 (3rd Rev. ed.).

Herbs, perennial, erect. Leaves shorter than stem, linear, multistriate, midrib strong. Inflorescence of spikes, in axillary and terminal panicles. Spikes brownish. Nuts ellipsoid, acutely trigonous, shortly stipitate.

Fls. & Frts. : September-March.

Illus. : Hooper in Sald. & Nicols. op. cit. 656, f. 110 G; Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 624. 1988.

Distrib. : Ahmednagar; Kolhapur; Nasik; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

*C. cruciata* Wahlenb. in Kongl. Vetensk. Acad. Handl. Stockh. 24: 149. 1803; C. B. Cl. in Hook. f. Fl. Brit. India 6: 715. 1894; Blatt. in J. Bombay nat. Hist. Soc. 38: 7. 1935; Nelmes in Reinwardtia 1: 277. 1951. *C. condensata* Nees in Wight, Contrib. Bot. Ind. 123. 1834; C.B.Cl. in Hook. f. op. cit. 716; Cooke, Fl. Pres. Bombay 3: 420. 1958 (Repr. ed.). 'Lavicha Gavati'.

Herbs, 5–15 cm high. Leaves coriaceous, longer than stem. Panicles 15–20 cm long; bracts longer than panicles. Spikelets sessile, spreading; glumes ovate, acute, purple with brown streaks; stamens 3; stigmas 2. Nuts triquetrous, blackish-brown.

Fls. & Frts. : October–December.

Distrib. : Rare along roadsides and along forest fringes. Satara.

*C. indica* L. Mant. 2: 574. 1771; C.B.Cl. in Hook. f. Fl. Brit. India 6: 714. 1894; Nemes in Reinwardtia 1: 271. 1951.

Perennials, 40–50 cm tall, rhizomatous. Leaves coriaceous, linear, longer than stem. Panicles 15–20 cm long; spikelets androgynous, divaricate, unisexual; glumes lanceolate or ovate-lanceolate. Utricles ellipsoid to subglobose. Nuts stipitate, ovoid-subglobose.

Fls. & Frts. : September–October.

Illus. : A.S. Rao & Verma, Cyp. N.E. India 89, f. 57–57a. 1982.

Distrib. : Kolhapur.

#### CYPERUS L.

1. Spikelets digitate or clustered, not spicate :
  2. Perennials with a woody rootstock :
    3. Rhizomes very short; rootlets wiry ... *C. niveus*
    3. Rhizomes creeping; rootlets thick :
      4. Rootlets woolly ... *C. pachyrrhizus*
      4. Rootlets glabrous :
        5. Spikelets linear; nuts shortly apiculate at apex, yellow or pale brown ... *C. halpan*
        5. Spikelets elliptic-lanceolate; nuts obtuse at apex, black ... *C. arenarius*
  2. Annuals :
    6. Culms gracile, short, curved at base ... *C. decumbens*
    6. Culms not as above :
      7. Glumes mucronate :
        8. Glumes not truncate or emarginate ... *C. rubicundus*
        8. Glumes truncate or emarginate :
          9. Glumes with straight awn; stamen 1; nut oblong, 0.63–0.73 cm wide ... *C. castaneus*
          9. Glumes with recurved awn; stamens 2 or 3; nut obovoid, 0.75–1.0 cm wide ... *C. cuspidatus*

7. Glume

10. N

10. N

1. Spikelets (

11. Rhach

12. A

1

1

12. F

1

1

11. Rhach

21. S

7. Glumes not mucronate :
10. Nut white when ripe ... *C. tenuispica*
10. Nut brown when ripe ... *C. difformis*
1. Spikelets (sometimes very shortly) spicate :
11. Rhachilla of spikelets not much winged :
12. Annuals with tufted stems :
13. Spikelets in short spikes, 0.6–6.0 cm long; nuts c 1/2 as long as glume ... *C. compressus*
13. Spikelets in much elongated spikes, the rhachis several times longer than the spikelets; nuts nearly as long as glume :
14. Rhachis smooth; keel 3–5-nerved, smooth ... *C. iria*
14. Rhachis scabrid on angles; keel 7-nerved, margins serrate ... *C. alulatus*
12. Perennials with woody rhizome and often long stolons :
15. Spikelets single flowered ... *C. pentabracteatus*
15. Spikes 8–50-flowered :
16. Base of glumes decurrent along the rhachilla internode :
17. Spikelets linear to lanceolate, 0.15–0.2 cm wide; glumes close together, acute at apex ... *C. tenuiculmis*
17. Spikelets filiform, subterete, less than 0.1 cm wide; glumes spaced, obtuse at apex :
18. Spikelets spreading; glumes rounded-obtuse at apex, bearing moderately narrow hyaline margins towards apex ... *C. distans*
18. Spikelets erecto-patent; glumes shallowly emarginate, margins hyaline towards apex ... *C. nutans*
16. Base of glumes not decurrent along the rhachilla internode :
19. Rhachis of spikes densely hispid; glumes acute, apex not hyaline ... *C. pilosus*
19. Rhachis of spikes glabrous; glumes obtuse, apex white-hyaline :
20. Spikelets spicate ... *C. malaccensis*
20. Spikelets compressed ... *C. procerus*
11. Rhachilla of spikelets (usually conspicuously) winged :
21. Stolons absent :

22. Leaves usually absent, if present less than half the length of the stem ...
22. Leaves more than half the length of the stem : ... *C. pangorei*
23. Rhachilla deciduous ...
23. Rhachilla persistent : ... *C. macer*
24. Spikelets much compressed, ascending, lanceolate to lanceolate-oblong, 0.15 cm wide, flattened, wings persistent ...
24. Spikelets spreading horizontally, linear, terete, 0.05–0.1 cm wide, wings deciduous ... *C. exaltatus*
21. Stolons present : ... *C. digitatus*
25. Stolons slender, soon disappearing terminating in tunicated bubils ...
25. Stolons long, persistent, hardening into creeping or woody rhizome : ... *C. bulbosus*
26. Leaves absent, or if present then half the length of stem :
27. Culms transversely septate; bracts 1–3, scale-like, triangular, acute ... *C. articulatus*
27. Culms not septate; bracts 3–5, linear, ensiform, shorter or longer than the inflorescence ... *C. corymbosus*
26. Leaves present, always more than half the length of stem :
28. Leaves rigid, filiform or very narrow; umbels simple, compact ... *C. stoloniferus*
28. Leaves flaccid, flat; umbels expanded, usually compound;
29. Tubers zoned; glumes with 7–9 nerves, golden yellow to pale brown; stolons very slender ... *C. esculentus*
29. Tubers not zoned; glumes with 5–7 nerves, usually deep brown; stolons stoutish ... *C. rotundus*

*Cyperus alulatus* Kern in Reinwardtia 1: 463, f. 1. 1952. *C. iria* var. *rectangularis* Kuekenh. in Engl. Pflanze. 4, 20, 101: 152. 1935. *C. rectangularis* (Kuekenh.) Bennet in Indian Forester 95: 692. 1969.

Herbs, c 30 cm high. Leaves 12–16 cm long, linear. Inflorescence of terminal, lax, compound umbels. Spikelets 0.4 x 0.2 cm, reddish or greenish-yellow. Nuts c 0.1 cm long, obovoid, spiculate, brown.

Fls. & Frts. : July–September.

Illus. : Kern, *op. cit.*

Distrib. : Common in all districts.

**C. arenarius** Retz. Obs. Bot. 4: 9. 1786; C.B.Cl. in Hook. f. Fl. Brit. India 6: 602. 1893; Cooke, Fl. Pres. Bombay 3: 378. 1958 (Repr. ed.); T. Koyama in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 5: 208. 1985.

Rhizomatous herbs; rhizomes creeping; stems solitary. Leaves longer or shorter than stem, linear, spreading, with sheathing base. Spikelets 1.2–2.7 x 0.3–0.6 cm, in globose heads, subtended by 1–3 bracts; glumes ovate-oblong, brown, obtuse, c 0.4 cm long. Nuts 0.18–0.2 x 0.1 cm, obovoid, trigonous, black or dark brown, smooth.

Fls. & Frts. : August–December.

Illus. : T. Koyama in Dassan. & Fosb. op. cit. 10, f. 13; Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 630. 1988.

Distrib. : Bombay; Kolhapur; Raigad; Ratnagiri; Sindhudurg; Thane.

Notes : Cooke (op. cit.) has not reported it from Maharashtra. Blatter & McCann (1934) reported it from Konkan.

**C. articulatus** L. Sp. Pl. 44. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 6: 611. 1893; T. Koyama in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 5: 176. 1985.

Herbs, c 2.5 m high, erect; root-stock stout, stoloniferous. Umbel compound, of many spikes; floral glumes 0.23–0.35 cm long. Nuts trigonous, oblong-ellipsoid, black.

Frts. : September.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 780. 1982.

Distrib. : Pune; Thane.

**C. bulbosus** Vahl, Enum. Pl. 2: 342. 1806; C.B. Cl. in Hook. f. Fl. Brit. India 6: 611. 1893; Cooke, Fl. Pres. Bombay 3: 384. 1958 (Repr.ed.); Kern in Steenis, Fl. Males. 1, 7: 605. 1974.

Perennials; stolons 1.2–6.2 cm long, filiform, with bulbils formed close to the ends of the stolons; stems 10–30 cm long. Leaves tapering to a fine point at the apex; sheaths long, membranous. Inflorescence a head of umbels formed of slender, alternate spikes each bearing 3–12 spikelets, the lower distant from the upper. Spikelets 1.0–1.5 x 0.2–0.25 cm, compressed, red, 8–24-flowered. Nuts c 0.15 long, obovoid, obtuse, triquetrous, black.

Fls. & Frts. : July–December.

*Illus.* : Kuekenth. in Engl. Pflanzenr. 4, 20, 101: (Heft): 125, f. 15 C-E. 1936.

*Distrib.* : Pune; Sindhudurg; Thane.

*C. castaneus* Willd. Sp. Pl. 1: 278. 1779; C.B.Cl. in Hook. f. Fl. Brit. India 6: 598. 1893; Cooke, Fl. Pres. Bombay 3: 374. 1958 (Repr. ed.); Kern in Steenis, Fl. Males. 1, 7: 630. 1974.

Small herbs, 5-8 cm tall; stems tufted. Leaves as long as or shorter than stem. Spikelets in simple umbels, 1-2 cm, sessile; glumes 0.1-0.2 cm long, keel greenish-yellow with a recurved mucro. Nuts 0.06-0.09 x 0.025-0.03 cm, oblong, obovoid, trigonous, brown or yellow.

*Fls. & Frts.* : December.

*Illus.* : Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 631. 1988.

*Distrib.* : Bombay; Chandrapur; Kolhapur; Sindhudurg; Thane.

*C. compressus* L. Sp. Pl. 46. 1753 *emend.* Dandy in Exell. Cat. S. Tomes 357. 1944; C.B.Cl. in Hook. f. Fl. Brit. India 6: 605. 1893; Cooke, Fl. Pres. Bombay 3: 379. 1958 (Repr. ed.); Kern in Steenis, Fl. Males. 1, 7: 617. 1974.

Herbs, annual, 15 cm high, erect. Leaves basal, shorter or slightly longer than culms, linear. Inflorescence of simple umbels. Spikelets 1.2-1.8 x 0.2 cm, greenish-yellow, in clusters. Nuts 0.1-0.15 x 0.07-0.1 cm, obovoid-ellipsoid, triquetrous, dark brown, shortly beaked.

*Fls. & Frts.* : July-October.

*Illus.* : Mahesh. Illus. Fl. Delhi f. 217. 1966; Ugemuge, Fl. Nagpur Dt. t. 166. 1986; Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 632. 1988.

*Distrib.* : Common in all districts.

*C. corymbosus* Rottb. Descr. Ic. 42, t. 7, f. 4. 1773; C.B.Cl. in Hook. f. Fl. Brit. India 6: 612. 1893; Cooke, Fl. Pres. Bombay 3: 385. 1958 (Repr. ed.). *C. tegetiformis* Roxb. ex Arn. in Wight, Contrib. Bot. Ind. 89. 1834; C. B. Cl. in Hook. f. *op. cit.*

Herbs, perennial; root-stock tuberous; stem erect, 1-2 m high, subtrigonus. Leaves linear. Inflorescence a decompound umbel. Spikelets alternate, 0.3-1.0 x 0.1 cm, greenish-brown, ovate. Nuts obovoid, apiculate.

*Fls. & Frts.* : August-November.

*Illus.* : S  
Fl. Tamilnadu

*Distrib.*  
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*Notes* : C  
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*Illus.*

*Distr*

*C. di*  
6: 599. 18  
Steenis, F

*Illus.* : Subr. Aquat. Ang. 170, f. 58. 1962; Matthew, Further *Illus.* Fl. Tamilnadu Carnatic 4: t. 633. 1988.

*Distrib.* : Amaravati; Nagpur; Nasik; Osmanabad; Pune; Satara; Sindhudurg; Thane.

*Notes* : Cooke (*op. cit.*) reported that he had not seen any specimen of *C. tegetiformis* Roxb. from Bombay Presidency. He had included it on the authority of Woodrow. He doubted that this species may be only *C. corymbosus* Rottb. Blatter & McCann (1934) agreed with Cooke's view and they merged this species with *C. corymbosus* Rottb. which is reported from Maharashtra, N. Kanara and S.M. Country. Naik (1979) also agreed with this view and he reported this species from Osmanabad.

*C. cuspidatus* Kunth in H.B. & K. Nov. Gen. Sp. 1: 204. 1815; C.B.Cl. in Hook. f. Fl. Brit. India 6: 598. 1893; Kern in Steenis, Fl. Males. 1, 7: 629, f. 59. 1974. *C. uncinatus sensu* C.B.Cl. in Philipp. J. Sci. 2: 82. 1907 *non* Poir. 1806; Cooke, Fl. Pres. Bombay 3: 375. 1958 (Repr. ed.); Blatt. in J. Bombay nat. Hist. Soc. 37: 258. 1934.

Small, annual herbs; stems tufted; roots fibrous. Leaves as long as or shorter than stem, narrow, setaceous. Spikelets in simple umbels, digitate, linear, 0.5–1.5 cm long, reddish-brown; glumes oblong-spathulate, keel nerved, mucro spreading or recurved. Nuts 0.05–0.75 x 0.03–0.04 cm, obovoid, trigonous, brown to castaneous.

*Fls. & Frts.* : October–November.

*Illus.* : Kern in Steenis, *op. cit.*

*Distrib.* : Kolhapur; Pune; Sindhudurg.

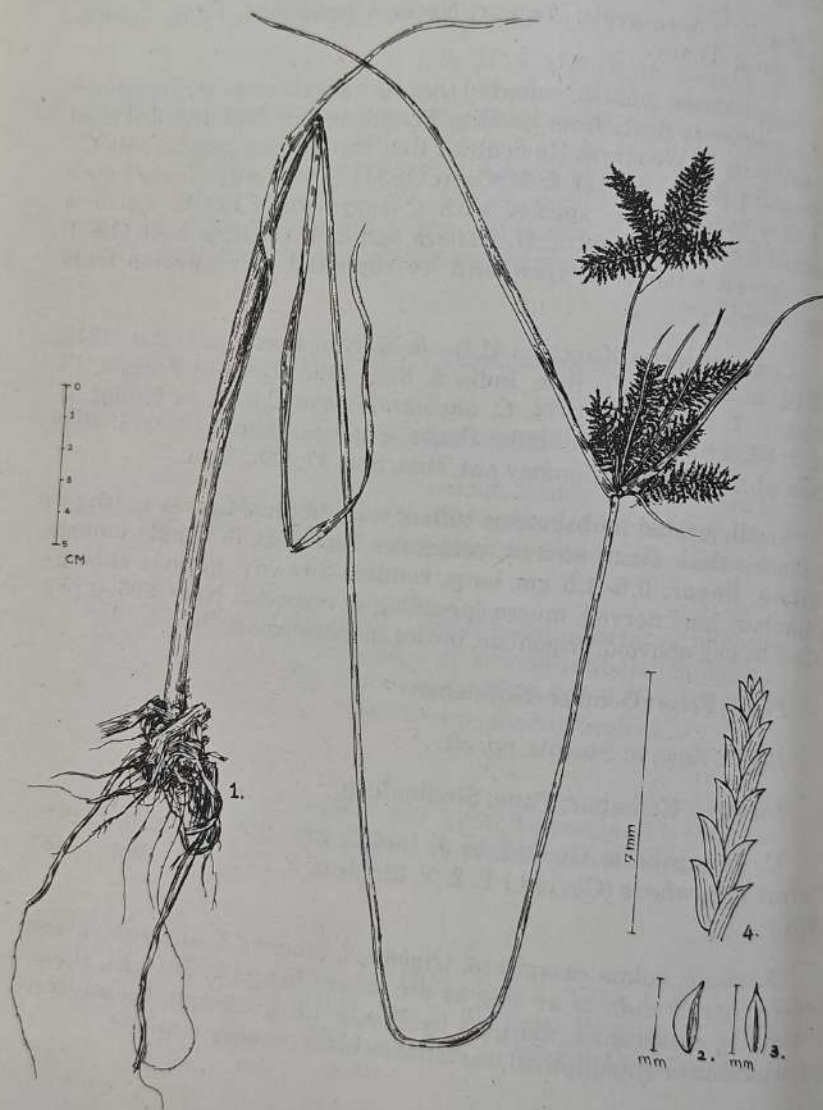
*C. decumbens* Govind. in J. Indian Bot. Soc. 52: 72, f. 1. 1973. *Pycnus decumbens* (Govind.) P. & V. Singh in J. Econ. Tax. Bot. 5: 467. 1984.

Annuals; culms caespitose, trigonous, erect or decumbent at base. Leaves shorter than or as long as the culms. Bracts 2, unequal; glumes distichous, castaneous, margins hyaline, c 1.6 x 1.5 mm, keeled. Nuts suborbicular or subelliptical, castaneous black, shortly stipitate.

*Illus.* : Govind. *op. cit.*

*Distrib.* : Satara.

*C. difformis* L. Sp. Pl. 67. 1753; C. B. Cl. in Hook. f. Fl. Brit. India 6: 599. 1893; Cooke, Fl. Pres. Bombay 3: 376. 1958 (Repr. ed.); Kern in Steenis, Fl. Males. 1, 7: 629. 1974. 'Lavala'.



*Cyperus digitatus* Roxb. var. *digitatus*  
1. Habit 2. Nut 3. Glume 4. Spikelet

Herb  
Inflorescence  
capitate  
cm, brown

Fls.

Illustration

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Herbs, annual, c 30 cm high. Leaves 15–20 cm long, linear. Inflorescence a terminal, simple or compound umbel with a sessile, capitate head at the base of each umbel. Spikelets 0.1–0.8 x 0.1–0.15 cm, brown. Nuts c 0.1 cm long, ovate-oblong, minutely punctate.

Fls. & Frts. : August–January.

Illus. : Kuekenth. in Engl. & Prantl, Pflanzenr. 4, 20, 101: 238, f. 27 F–H. 1936; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 781. 1982.

Distrib. : Common in all districts.

*C. digitatus* Roxb. Fl. Ind. 1: 209. 1820; C.B.Cl. in Hook. f. Fl. Brit. India 6: 618. 1893; Cooke, Fl. Pres. Bombay 3: 387. 1958 (Repr. ed.); Blatt. & McC. in J. Bombay nat. Hist. Soc. 37: 277. 1934; Kern in Steenis, Fl. Males. 1,7: 601. 1974. *C. spongiosa-vaginatus* Boeck. Cyperac. Nov. 1: 5. 1888; C.B.Cl. in Hook. f. op. cit. 619.

- |                                      |     |                       |
|--------------------------------------|-----|-----------------------|
| 1. Spikelets 0.05–0.1 cm wide        | ... | var. <i>digitatus</i> |
| 1. Spikelets somewhat broader, rigid | ... | var. <i>khasiana</i>  |
- var. *digitatus*.

Herbs, perennial; rhizomes stout, woody, creeping; stems 30–120 cm long. Leaves 1.2–1.8 cm broad, flat, coriaceous, margins scaberulous. Umbels up to 30 cm in diam., simple or compound; spikes 2.4–3.7 x 1.0–1.2 cm. Spikelets 0.33–0.6 cm long, subterete, 12–20-flowered, yellowish-brown. Nuts c 0.13 cm long, ellipsoid, tapering at both ends, straight or slightly curved, trigonous.

Fls. & Frts. : September–December.

Illus. : Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: tt. 634 & 635. 1988.

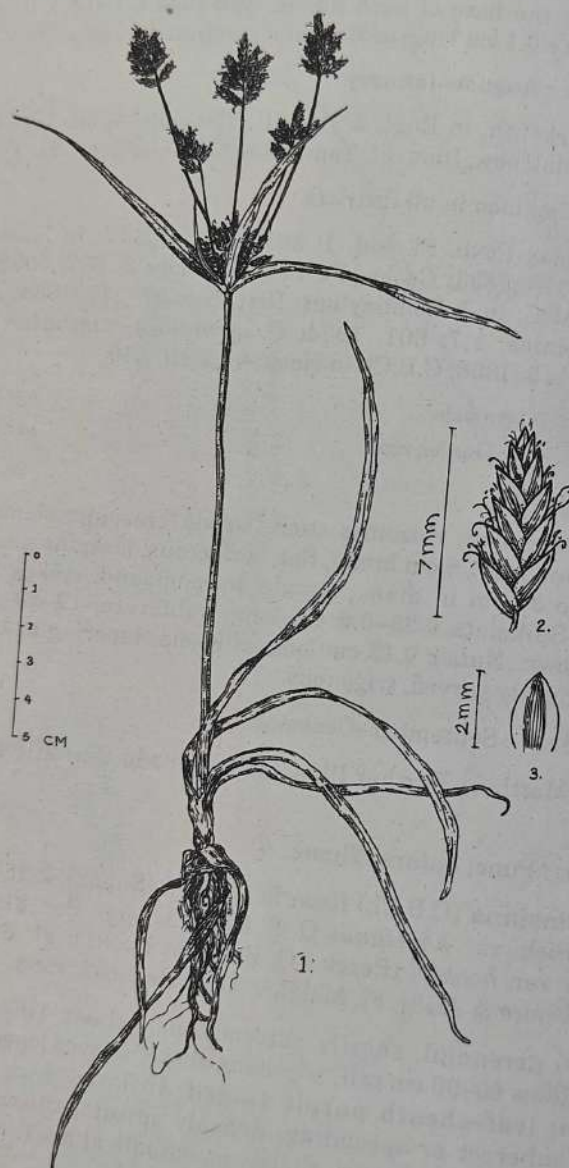
Distrib. : Pune; Satara; Thane.

var. *khasiana* (C.B.Cl.) Kern in Blumea (Suppl.) 4: 165. 1958. *C. auricomus* Sieb. var. *khasianus* C. B. Cl. in J. Linn. Soc. 21: 189. 1884. *C. digitatus* var. *hookeri* (Boeck.) C. B. Cl. in Hook. f. Fl. Brit. India 6: 618. 1893; Dhore & Joshi, Fl. Melghat Tiger Res. 182. 1988.

Herbs, perennial, shortly rhizomatous, robust; rhizomes short, creeping; stems 60–90 cm tall, trigonous above. Leaves longer or shorter than stem; leaf-sheath purple tinged. Inflorescence umbellate. Spikelets suberect or spreading, densely spicate, ultimately bright brown. Nuts trigonous, brown, shortly acuminate at apex.

Fls. & Frts. : September–December.

Distrib. : Rare in marshy habitats along water margins of streams and rivers. Amaravati.



*Cyperus esculentus* L.  
1. Habit 2. Spikelet 3. Glume

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6: 607. 18

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0.8-1.0 cm  
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*C. distans* L. f. Suppl. 103. 1781; C.B.Cl. in Hook. f. Fl. Brit. India 6: 607. 1893; Kern in Steenis, Fl. Males. 1, 7: 610. 1974.

Herbs, perennials; rhizomes subterranean, stoloniferous; stems smooth, 40–60 cm tall. Leaves sub-basal, as long as stems or longer, 0.8–1.0 cm, apex gradually acuminate, scabrid in the upper part. Spikes in compound umbels, usually open; bracts 4–6, spreading, primary rays 6–12, up to 15 cm long; spikelets spicate, lower ones at right angles to rhachis, 0.8–1.5 cm long; glumes oblong-ovate, obtuse; stamens and stigmas 3. Nuts 0.15–0.18 x 0.03–0.05 cm, oblong-cylindrical or obovoid, blackish-brown.

*Fls. & Frts.* : September–November.

*Illus.* : Hooper in Sald. & Nicols. Fl. Hassan Dt. 656, f. 110A. 1976; Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 634 & 636. 1988.

*Distrib.* : Ahmednagar; Bombay; Dhule; Kolhapur; Pune; Raigad; Satara; Sindhudurg.

*C. esculentus* L. Sp. Pl. 67. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 6: 616. 1893; Cooke, Fl. Pres. Bombay 3: 390. 1958 (Repr. ed.); Kern in Steenis, Fl. Males. 1, 7: 605. 1974.

Herbs, perennial, c 15 cm high. Leaves 6–12 x 0.1–0.3 cm, linear. Inflorescence a terminal, compound umbel. Spikelets c 0.5 x 0.2 cm, linear-lanceolate or ovate-lanceolate, greenish-yellow. Nuts c 0.15 x 0.1 cm, obovoid, greyish-black.

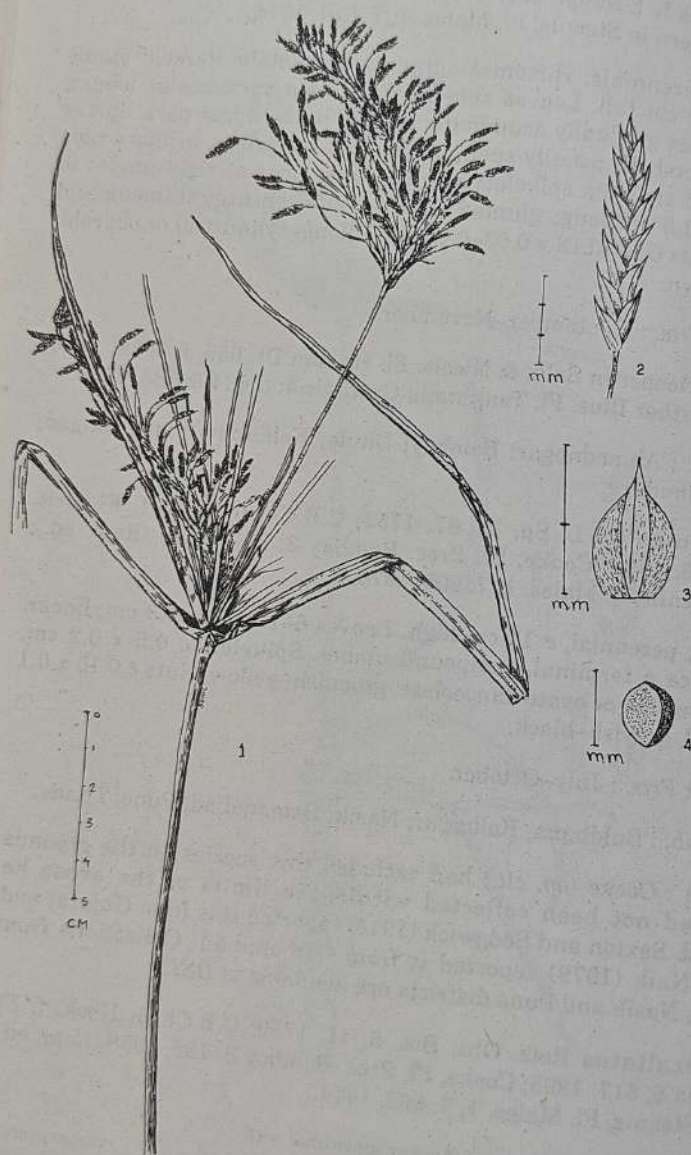
*Fls. & Frts.* : July–October.

*Distrib.* : Buldhana; Kolhapur; Nasik; Osmanabad; Pune; Thane.

*Notes* : Cooke (*op. cit.*) had excluded this species on the grounds that it had not been collected within the limits of the areas he considered. Saxton and Sedgwick (1918) reported this from Gujarat and Bombay. Naik (1979) reported it from Osmanabad. Collections from Kolhapur, Nasik and Pune districts are available at BSI.

*C. exaltatus* Retz. Obs. Bot. 5: 11. 1789; C.B.Cl. in Hook. f. Fl. Brit. India 6: 617. 1893; Cooke, Fl. Pres. Bombay 3: 186. 1958 (Repr. ed.); Kern in Steenis, Fl. Males. 1, 7: 602. 1974.

- |  |     |                       |
|--|-----|-----------------------|
| 1. Spikelets ascending; glumes without or sometimes with narrow scarious margins | ... | var. <i>exaltatus</i> |
| 1. Spikelets horizontally spreading; glumes with scarious margins                | ... | var. <i>dives</i>     |



*Cyperus exaltatus* Retz. var. *dives* (Del.) C.B.Cl.  
1. Habit 2. Spikelet 3. glume 4. Nut

var. *exaltatus*  
Herbs, rhiz  
Leaves 0.6–1.5 c  
umbel, terminal.  
x 0.03–0.05 cm, e

Fls. & Frts.

Illus. : Kerr  
Illus. Fl. Tamilna

Distrib. : Co

var. *dives* (C  
Fl. Brit. India 6:  
ed.). *C. dives* Del

Herbs, per  
spreading; glum  
ellipsoid-oblong

Fls. & Frts

Distrib. : J

*C. halpar*  
Brit. India 6: 6  
ed.); Kern in St

Herbs, sle  
cm tall. Leaves  
simple or comp  
or ovate-oblong  
dark-brown; st  
long, sharply a

Fls. & Frt

Illus. : K  
Further Illus. 1

Distrib. :

*C. iria* L  
1893; Cooke, F  
Fl. Males. 1,  
C. B. Cl. in Ho

Herbs; c  
multistriate,

*var. exaltatus.*

Herbs, rhizomatous; culms robust, 0.4–1.8 m tall, trigonous. Leaves 0.6–1.5 cm wide, linear, scabrous. Inflorescence a compound umbel, terminal. Spikelets yellowish to golden-brown. Nuts 0.07–0.08 x 0.03–0.05 cm, ellipsoid, brownish-yellow, stipitate.

*Fls. & Frts.* : September–November.

*Illus.* : Kern in Reinwardtia 2: 100, f. 2. 1952; Matthew, Further

*Illus. Fl. Tamilnadu Carnatic 4: t. 637 & 638. 1988.*

*Distrib.* : Common in all districts.

*var. dives* (Del.) C.B.Cl. in J. Linn. Soc. 21: 187. 1884 & in Hook. f. Fl. Brit. India 6: 617. 1893; Cooke, Fl. Pres. Bombay 3: 386. 1958 (Repr. ed.). *C. dives* Del. Fl. Egypt. 149, t. 4, f. 3. 1812.

Herbs, perennial. Spikelets turgid, yellow, shining, horizontally spreading; glumes with scarious margins. Nuts broadly ovoid or ellipsoid-oblong.

*Fls. & Frts.* : February–March.

*Distrib.* : Jalgaon; Nasik; Pune.

*C. halpan* L. Sp. Pl. 45. 1753 ('haspan'); C.B.Cl. in Hook. f. Fl. Brit. India 6: 600. 1893; Cooke, Fl. Pres. Bombay 3: 376. 1958 (Repr. ed.); Kern in Steenis, Fl. Males. 1, 7: 624. 1974.

Herbs, slender, perennial; rhizomes short, creeping; stems 15–20 cm tall. Leaves usually shorter than stem, 0.3–0.4 cm wide. Spikelets in simple or compound umbels, 3–8-together, c 1 cm long; glumes elliptic or ovate-oblong, c. 0.1 cm long, obtuse, sometimes shortly mucronate, dark-brown; stamens usually 1, rarely 2; stigmas 3. Nuts 0.04–0.05 cm long, sharply angular, trigonous, smooth to slightly warty.

*Fls. & Frts.* : October–February.

*Illus.* : Kern in Steenis, *op. cit.* 626, f. 56 & 627, f. 57; Matthew, Further *Illus. Fl. Tamilnadu Carnatic 4: t. 639. 1988.*

*Distrib.* : Kolhapur; Pune; Ratnagiri; Satara; Sindhudurg.

*C. iria* L. Sp. Pl. 45. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 6: 606. 1893; Cooke, Fl. Pres. Bombay 3: 380. 1958 (Repr. ed.); Kern in Steenis, Fl. Males. 1, 7: 616. 1974. *C. iria* var. *paniciformis* (Franch. & Sav.) C. B. Cl. in Hook. f. *op. cit.* 607.

Herbs; culms 8–60 cm tall. Leaves basal, 10–17 x 0.1–0.5 cm, multistriate, finely acuminate. Inflorescence a terminal, simple or

compound umbel. Spikelets 0.5–1.0 x 0.3 cm, greenish-yellow, linear-oblong, or ovate-lanceolate. Nuts c 0.1 cm long, obovoid, stipitate, triquetrous, dark brown to black.

*Fls. & Frts.* : June–February.

*Illus.* : C.B.Cl. *Illustr. Cyper. t.* 14(1–2). 1909; Ugemuge, Fl. Nagpur Dt. t. 167. 1986; Matthew, *Further Illus. Fl. Tamilnadu Carnatic* 4: t. 640. 1988.

*Distrib.* : Ahmednagar; Amaravati; Bhandara; Bombay; Chandrapur; Kolhapur; Nagpur; Nasik; Osmanabad; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

*C. macer* C.B.Cl. in *J. Linn. Soc.* 21: 160. 1884 & in *Hook. f. Fl. Brit. India* 6: 613. 1893; Blatt. & McC. in *J. Bombay nat. Hist. Soc.* 37: 272. 1934.

Herbs, 60–90 cm high. Bracts 13–50 cm long. Spikelets linear, 1.0–1.3 cm long; glumes ovate-oblong, 3–5-nerved, green with brown margin. Nuts obovoid, ashy-black.

*Fls. & Frts.* : September–November.

*Illus.* : Blatt. & McC. *op. cit.* opp. page t. 3.

*Distrib.* : Rare along sides of streams on hill slopes. Jalgaon; Satara; Sindhudurg.

*C. malaccensis* Lam. *Illustr.* 1: 146. 1791; C.B.Cl. in *Hook. f. Fl. Brit. India* 6: 608. 1893; Cooke, *Fl. Pres. Bombay* 3: 382. 1958 (Repr. ed.); Vartak & Ghate in *J. Econ. Tax. Bot.* 4: 440. 1983.

Rhizomes creeping, rather thick, clothed with dark brown scales; stems 45–90 cm long, acutely triquetrous. Leaves few, the uppermost 5–15 cm in diam. Inflorescence simple, compound or congested; spikes of 4–10 spikelets. Spikelets 1.0–1.5 x 0.15–0.2 cm, linear, 12–40-flowered. Nuts c 0.2 cm long, narrowly oblong, obtusely trigonous, tapering at either end, shortly apiculate.

*Fls. & Frts.* : August–November.

*Distrib.* : A few in and near tidal creeks and mangroves. Raigad (Vartak & Ghate, *op. cit.*); Ratnagiri; Sindhudurg; Thane (Cooke, *op. cit.*).

*C. niveus* Retz. *Obs.* 5: 12. 1788; C.B.Cl. in *Hook. f. Fl. Brit. India* 6: 601. 1893; Cooke, *Fl. Pres. Bombay* 3: 377. 1958 (Repr. ed.); Blatt. & McC. in *J. Bombay nat. Hist. Soc.* 37: 261. 1934.

Herbs, c  
stems solitary  
finely toothed.  
leaf-like. Spi  
winged. Nuts t

*Fls. & Fr*

*Illus.* : C  
Nagpur Dt. t.

*Distrib.* :

*C. nuta*  
*Brit. India* 6:  
ed.); Kern in S

1. Glumes rem  
1. Glumes not

var. nuta

Herbs, p  
cm, linear, m  
Nuts c 0.1 cm

*Fls. & F*

*Distrib.*  
Ratnagiri; Se

var. ele  
941. 1961 (R  
*eleusinoides* l  
*India* 6: 608.  
*nutans* ssp. e  
30: 136. 1977

Herbs, p  
midribs stout  
brown. Nuts c

*Fls. & F*

*Illus.* :  
1988.

*Distrib.*

*C. pach*  
Cl. in Hook.

Herbs, c 45 cm tall, slender, perennial; rhizomes short, nodulose; stems solitary. Leaves much shorter than stem, flat, flaccid, margins finely toothed. Stems encycling in a head of 3-9 spikelets; bracts 2, long, leaf-like. Spikelets large, compressed, snow-white; rhachilla not winged. Nuts triquetrous, dark-brown.

Fls. & Frts. : August-October.

Illus. : C. B. Cl. Illustr. Cyper. t. 7(4-7). 1909; Ugemuge, Fl. Nagpur Dt. t. 168. 1986.

Distrib. : Nagpur; Pune.

*C. nutans* Vahl, Enum. Pl. 2: 363. 1806; C.B.Cl. in Hook. f. Fl. Brit. India 6: 607. 1893; Cooke, Fl. Pres. Bombay 3: 381. 1958 (Repr. ed.); Kern in Steenis, Fl. Males. 1, 7: 609. 1974.

- |  |     |                          |
|--|-----|--------------------------|
| 1. Glumes remote; nut nearly as long as the glume  | ... | var. <i>nutans</i>       |
| 1. Glumes not remote; nut 1/2 as long as the glume | ... | var. <i>eleusinoides</i> |

var. *nutans*.

Herbs, perennial; culms 10-120 cm tall. Leaves 20-40 x 0.6-1.5 cm, linear, multistriate. Spikelets 6-10-flowered, red or dark brown. Nuts c 0.1 cm long, narrowly obovoid or oblong, apiculate.

Fls. & Frts. : September-November.

Distrib. : Ahmednagar; Dhule; Kolhapur; Nasik; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

var. *eleusinoides* (Kunth) Haines, Bot. Bih. Or. 3: 898. 1924 [3: 941. 1961 (Repr. ed.)]; Kern in Steenis, Fl. Males. 1, 7: 610. 1974. *C. eleusinoides* Kunth, Enum. Pl. 2: 39. 1837; C.B.Cl. in Hook. f. Fl. Brit. India 6: 608. 1893; Cooke, Fl. Pres. Bombay 3: 382. 1958 (Repr. ed.). *C. nutans* ssp. *eleusinoides* (Kunth) T. Koyama in Gard. Bull. Singapore 30: 136. 1977.

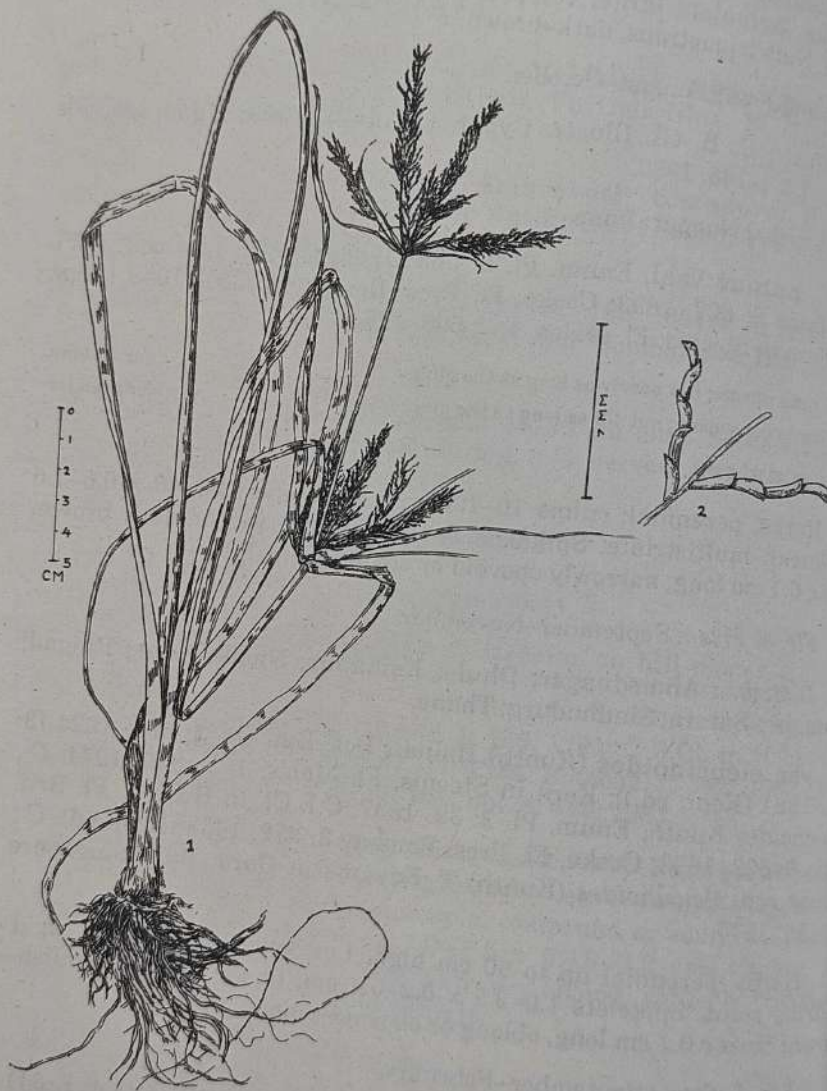
Herbs, perennial up to 60 cm high. Leaves c 3.0 x 0.5 cm, rigid. Midribs stout. Spikelets 1.0-2.5 x 0.2-0.4 cm, linear-oblong, reddish-brown. Nuts c 0.1 cm long, oblong or obovoid-oblong, apiculate.

Fls. & Frts. : September-February.

Illus. : Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 641. 1988.

Distrib. : Common in all districts.

*C. pachyrrhizus* Nees ex Boeck. in Linnaea 35: 545. 1868; C.B. Cl. in Hook. f. Fl. Brit. India 6: 603. 1893. *C. conglomeratus* Rottb. var.



*Cyperus nutans* Vahl var. *nutans*.  
1. Habit 2. Spikelet

*pachyrhizus*  
Ceyl. 1884  
conglomerate  
Mag. 7

cm, st  
10-26  
conglomerate  
40-75  
1.2-2.0  
elliptic

Koyan  
C. cor  
1884  
1: 20  
Bomb

25.0  
Spike  
oblong

Illus.

Sci. 8

triquetrate  
asper  
surface  
Inflorescence  
subglobose  
cm. 1  
0.08-0.12  
brown

*pachyrrhizus* (Nees ex Boeck.) Trim. ex Hook. f. in Trimen, Handb. Fl. Ceyl. 5: 23. 1900; Cooke, Fl. Pres. Bombay 3: 379. 1958 (Repr.ed.). *C. conglomeratus* ssp. *pachyrrhizus* (Nees ex Boeck.) T. Koyama in Bot. Mag. Tokyo 93: 344. 1980.

Herbs, densely tufted with a short rhizome; culms 20–60 x 0.2–0.3 cm, stiffly erect. Leaves several to a culm, 1/2 to 1/3 as long as culms, 10–26 x 0.2–0.4 cm, gradually tapering to an obtuse apex. Inflorescence congested in densely crowded, globose heads, 3–4 cm in diam., bearing 40–75 spikelets. Spikelets radiate, lanceolate, turgid with obtuse edges, 1.2–2.7 x 0.3–0.6 cm, densely 15–32-flowered. Nuts 0.18–0.2 x 0.1 cm, elliptic, obcompressed, trigonous, maturing black-brown.

Fls. & Frts. : November–December.

Distrib. : Thane.

*C. pangorei* Rottb. Descr. Ic. Rar. Nov. Pl. 31, t. 7, f. 3. 1773; T. Koyama in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 5: 176, f. 9. 1985. *C. corymbosus* var. *pangorei* (Rottb.) C. B. Cl. in J. Linn. Soc. 21: 292. 1884 & in Hook. f. Fl. Brit. India 6: 612. 1893. *C. tegetum* Roxb. Fl. Ind. 1: 208. 1832; C.B.Cl. in Hook. f. op. cit. 613. 1893; Cooke, Fl. Pres. Bombay 3: 384. 1958 (Repr. ed.). 'Lahul'.

Herbs, perennial, 75–90 cm high; rhizomes short, woody. Leaves c 25.0 x 0.3 cm, linear. Inflorescence a terminal, compound umbel. Spikelets c 0.2 x 0.1 cm, reddish-brown. Nuts 0.1–0.13 x 0.03 cm, oblong-obovoid, punctate, blackish-brown.

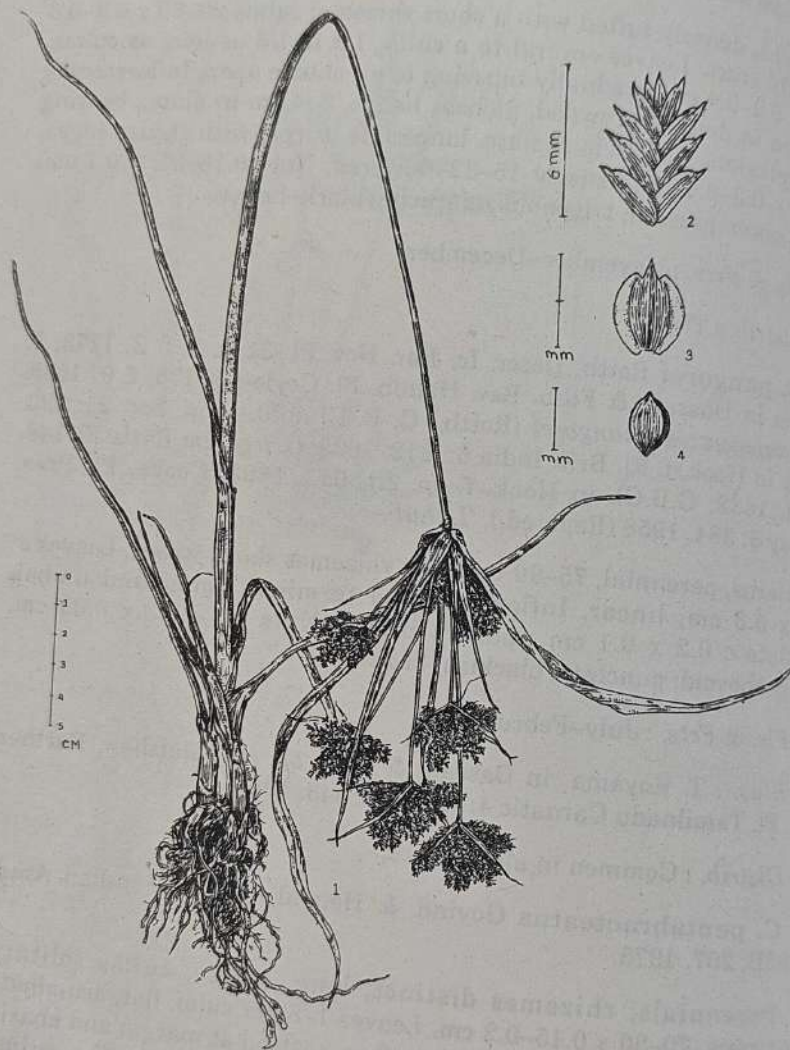
Fls. & Frts. : July–February.

Illus. : T. Koyama in Dassan. & Fosb. op. cit.; Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: tt. 642 & 643. 1988.

Distrib. : Common in all districts.

*C. pentabraceatus* Govind. & Hemadri in Proc. Indian Acad. Sci. 82B: 207. 1975.

Perennials; rhizomes distinct, long, woody; culms solitary, triquetrous, 70–80 x 0.15–0.2 cm. Leaves 1–5 per culm, flat, acuminate, asperous in upper half of abaxial surface, scabrid at margin and abaxial surface, 0.4–0.6 cm broad, 3/4 or nearly as long as the culms. Inflorescence simple, contracted, capitate, obtuse, broadly ovate or subglobose, consisting of densely numerous spikelets, 1.0–1.5 x 1.5–2.0 cm. Spikelets ovate-lanceolate or subulate, 1-flowered, 0.5–0.6 x 0.08–0.1 cm. Nuts broadly elliptic, narrowing at both ends, yellowish-brown, 0.28–0.29 x 0.08–0.1 cm.



*Cyperus nutans* Vahl var. *eleusinoides* (Kunth) Haines  
1. Habit 2. Spikelet 3. Glume 4. Nut

Illus

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Brit. Ind  
268.1934  
var. obliq  
op. cit. 6  
op. cit.

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glumes  
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4: t. 644

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*Illus.* : Govind. & Hemadri, *op. cit.* 208, f. 2 (a-f).

*Distrib.* : Pune.

*C. pilosus* Vahl, Enum. Pl. 2 : 354.1806; C. B. Cl. in Hook. f. Fl. Brit. India 6 : 609.1893; Blatt. & McC. in J. Bombay nat. Hist. Soc. 37 : 268.1934; Kern in Steenis, Fl. Males. 1, 7 : 611, f. 52. 1974. *C. pilosus* var. *obliqua* (Nees) C. B. Cl. in J. Linn. Soc. 21 : 151.1884 & in Hook. f. *op. cit.* 610. *C. pilosus* var. *polyantha* C. B. Cl. *op. cit.* 148 & in Hook. f. *op. cit.*

Herbs, c 1 m high, Leaves 0.6–1.3 cm wide, flat or faintly channelled. Bracts 10–15 cm long; spikelets 0.5–1.0 cm long, linear; glumes broadly ovate, mucronate. Nuts 0.1–0.13 x 0.05–0.08 cm, obovoid or ellipsoid, greyish, stipitate.

*Fls. & Frts.* : August–November.

*Illus.* : Kern in Steenis, *op. cit.*; A.S. Rao and Verma, Cyp. N-E. India 8, f. 6–6b. 1982; Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 644. 1988.

*Distrib.* : Pune; Ratnagiri; Satara; Sindhudurg.

*C. procerus* Rottb. Descr. & Ic. Rar. Nov. Pl. 29, t. 5, f. 3. 1775; C. B. Cl. in Hook. f. Fl. Brit. India 6 : 610.1893; Cooke, Fl. Pres. Bombay 3 : 381. 1958 (Repr. ed.); Kern in Steenis, Fl. Males. 1, 7 : 611, f. 51. 1974.

Herbs, c 1 m long; stolons elongate, woody, covered with scales. Leaves 0.7–1.5 cm wide, linear. Inflorescence simple to subcompound; bracts 2–5, foliaceous. Spikelets lax, 7–10-flowered; glumes straw coloured. Nuts c 1.5 mm long, dark brown.

*Fls. & Frts.* : November.

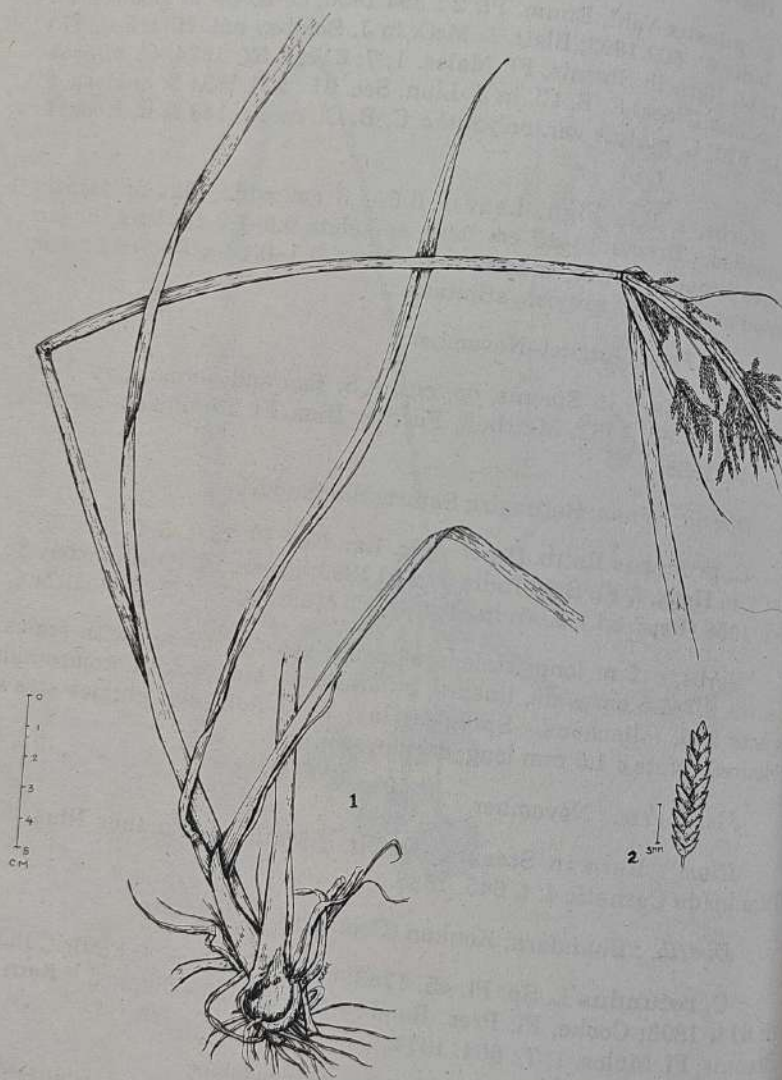
*Illus.* : Kern in Steenis, *op. cit.* ; Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 645. 1988.

*Distrib.* : Bhandara; Konkan (Cooke, *op. cit.*); Satara.

*C. rotundus* L. Sp. Pl. 45. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 6: 614. 1893; Cooke, Fl. Pres. Bombay 3 : 385.1958 (Repr.ed.); Kern in Steenis, Fl. Males. 1, 7 : 604. 1974.

- |  |     |                       |
|--|-----|-----------------------|
| 1. Stolons 10–20 cm long, bearing hard, black, fragrant tubers;<br>stems 10–75 cm long | ... | ssp. <i>rotundus</i>  |
| 1. Stolons not or rarely tuberiferous; stems 60–120 cm long                            | ... | ssp. <i>tuberosus</i> |

ssp. *rotundus*. 'Belgondhara', 'Moth', 'Motha', 'Nagar-motha'.



*Cyperus rotundus* L. ssp. *tuberosus* (Rottb.) Kuekenth.  
1. Habit 2. Spikelet

Herbs, stout  
Inflorescence a  
brown. Nuts c 0

Fls. & Frts

Illus. : Tad  
168.1955 [ Rev.  
Hooper in Sald.

Distrib. : C

ssp. *tuber*  
113. 1935; Kerr  
Ic. 28, t. 7, f. 1  
Cooke, Fl. Pres

Herbs, pe  
compound. Sp  
oblong, obtuse

Fls. & Fr

Distrib. :

*C. rubic*  
Nicols. Fl. Ha  
245.1806; C.I  
Pres. Bombay  
631, f. 60. 19

Herbs, s  
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cm, reddish-  
apiculate, da

Fls. & l

Illus. :  
cit. (*C. tener*  
648. 1988.

Distrib

*C. sto*  
Brit. India (

Stolon  
0.2-0.4 cm  
simple, con

Herbs, stout, perennial. Leaves 10–18 cm long, narrowly linear. Inflorescence a compound umbel. Spikelets 0.8–1.0 x 0.1 cm, linear, brown. Nuts c 0.15 cm long, broadly obovoid, greenish-black.

*Fls. & Frts.* : June–October.

*Illus.* : Tad. & Venkatanarayana, Handb. S. Indian Weeds, 420, f. 168.1955 [ Rev.ed. (*C. rotundus*) ]; Kern in Steenis, *op. cit.* 594, f. 49; Hooper in Sald. & Nicols. Fl. Hassan Dt. 656, f. 110 D. 1976.

*Distrib.* : Common in all districts.

ssp. *tuberosus* (Rottb.) Kuekenh. in Engl. Pflanzenr. 4, 20, 101 : 113. 1935; Kern in Reinwardtia 6 : 53.1961. *C. tuberosus* Rottb. Descr. & Ic. 28, t. 7, f. 1. 1773; C.B.Cl. in Hook. f. Fl. Brit. India 6 : 616.1893; Cooke, Fl. Pres. Bombay 3 : 385. 1958 (Repr. ed.).

Herbs, perennial. Leaves mostly radical, margins smooth. Umbels compound. Spikelets 1.2–2.0 cm long, reddish-brown. Nuts obovate-oblong, obtusely trigonous, grey.

*Fls. & Frts.* : September.

*Distrib.* : Nasik; Pune; Raigad; Sindhudurg; Thane.

*C. rubicundus* Vahl, Enum. Pl. 2 : 308.1805; Hepper in Sald. & Nicols. Fl. Hassan Dt. 669.1976. *C. teneriffae* Poir. in Lam. Encycl. 7 : 245.1806; C.B.Cl. in Hook. f. Fl. Brit. India 6 : 601.1893; Cooke, Fl. Pres. Bombay 3 : 374. 1958 (Repr.ed.); Kern in Steenis, Fl. Males. 1, 7 : 631, f. 60. 1974. 'Khadi-lavalu'.

Herbs, annual, 10–15 cm high, tufted; roots fibrous. Leaves 2–6 x 0.1 cm, linear. Heads 1.3–3.0 cm in diam. Spikelets 0.5–1.5 x 0.1–0.3 cm, reddish-brown, compressed. Nuts c 0.1 x 0.1 cm, obovoid, shortly apiculate, dark brown.

*Fls. & Frts.* : July–September.

*Illus.* : Kern in Reinwardtia 2 : 121, f. 11. 1952 & in Steenis, *op. cit.* (*C. teneriffae*); Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 648. 1988.

*Distrib.* : Ahmednagar; Nasik; Osmanabad; Pune.

*C. stoloniferus* Retz. Obs. Bot. 4 : 10.1786; C.B.Cl. in Hook. f. Fl. Brit. India 6 : 615.1893; Kern in Steenis, Fl. Males. 1, 7 : 606, f. 50.1974.

Stoloniferous sedges; stems wiry, flexuous, 10–30 cm tall. Leaves 0.2–0.4 cm wide, narrow, rigid, squarrosely recurved. Spikelets in simple, compact umbels, ovate, 0.6–1.2 cm long; glumes broadly ovate,

plicate, red with greenish keel. Nuts 0.1–0.15 x 0.1 cm, obovoid, plano-convex, dark brown.

*Fls. & Frts.* : June–October.

*Illus.* : C. B. Cl. *Illustr. Cyper. t.* 19 (1–3) 1909; Kern in Steenis, *op. cit.*; Matthew, Further *Illus. Fl. Tamilnadu Carnatic 4: t.* 649. 1988.

*Distrib.* : Bombay; Kolhapur; Ratnagiri.

**C. tenuiculmis** Boeck. in *Linnaea* 36: 286.1870; Kern in Reinwardtia 3: 28.1954 & 6: 53.1961 & in Steenis, *Fl. Males.* 1, 7: 608.1974; T. Koyama in *Gard. Bull. Singapore* 30: 135, f. 3, A–F.1977. *C. zollingeri sensu* C. B. Cl. in *Hook. f. Fl. Brit. India* 6: 613.1893 non Steud. 1855; Kern in Reinwardtia 2: 108, f. 6. 1952; Vartak & Ghate in *J. Econ. Tax. Bot.* 4: 442.1983. *C. zollingeri* Steud. var. *condensatus* Kuekenh. in *Engl. Pflanzenr.* 4, 20, 101: 134.1935.

Perennials; culms solitary or few together, stiffly erect, 35–70 cm tall, triquetrous. Leaves few, much shorter than the culm, 0.2–0.6 cm wide, folded, gradually narrowed to a very acute apex. Panicles simple or subcompound, lax or contracted, up to 15 cm long; spikes upto 5 cm long, ovoid, subdense. Spikelets 1–3 x 0.15–0.2 cm, linear to linear-lanceolate, subloosely 6–20-flowered. Nuts 0.17–0.2 x 0.08 cm, elliptic or obovoid, triquetrous, ripening blackish, minutely punctulate.

*Fls. & Frts.* : June–September.

*Illus.* : Kern, *op. cit.*; T. Koyama, *op. cit.*; T. Koyama in Dassan. & Fosb. *Rev. Handb. Fl. Ceylon* 5: 187, f. 11, A–F. 1985; Matthew, Further *Illus. Fl. Tamilnadu Carnatic 4: t.* 650. 1988.

*Distrib.* : Pune (Vartak & Ghate, *op. cit.*).

**C. tenuispica** Steud. *Syn. Cyp.* 11.1855; Kern in Steenis, *Fl. Males.* 1, 7: 625.1974. *C. flavidus sensu* C. B. Cl. in *Hook. f. Fl. Brit. India* 6: 600.1893 non Retz. 1789; Cooke, *Fl. Pres. Bombay* 3: 375.1958 (Repr. ed.).

Herbs, annual, 12–15 cm high, erect; stems solitary or tufted. Leaves 4–10 cm long, linear. Inflorescence a terminal umbellate spike. Spikelets 0.2–0.5 x 0.1 cm, linear, greenish-brown. Nuts c 0.1 cm long, broadly obovoid, stipitate, tubercled.

*Fls. & Frts.* : September–February.

*Illus.* : Kern in Steenis, *op. cit.* 628, f. 58; Matthew, Further *Illus. Fl. Tamilnadu Carnatic 4: t.* 651. 1988.

*Dist*  
Kolhapur;

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C. fl  
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*Distrib.* : Ahmednagar; Bhandara; Bombay; Chandrapur; Kolhapur; Nagpur; Nasik; Pune; Raigad; Satara; Sindhudurg; Thane.

#### CULTIVATED SPECIES:

*C. flabelliformis* Rottb. Descr. Pl. Rar. Progr. 22.1772 & Descr. Ic. 42, t. 12, f. 2. 1773; Kern in Steenis, Fl. Males. 1, 7: 618. 1974. *C. alternifolius* L. ssp. *flabelliformis* (Rottb.) Kuekenh. in Engl. Pflanzenr. 4, 20, 101: 193.1936.

Sedges, 0.5–1.0 m tall; rhizomes woody; culms densely tufted. Umbels compound. Spikelets lanceolate-oblong to elliptic, 0.3–0.9 x 0.17–0.3 cm, light green. Achenes obovate-elliptic, 3–5-angled.

*Fls. & Frts.* : September–October.

*Distrib.* : Cultivated as an ornamental. Bombay; Kolhapur; Pune.

#### DIPLACRUM R. Br.

*Diplacrum caricinum* R. Br. Prodr. 241. 1810; Karthik. *et al.* Fl. Ind. Enum. Monocot. 48. 1989. *Scleria caricina* (R. Br.) Bth. Fl. Austral. 7:426. 1878; C. B. Cl. in Hook. f. Fl. Brit. India. 6: 888. 1894; Kern in Steenis, Fl. Males. 1, 7: 749. 1974; S.M. Almeida, Fl. Savantwadi 2: 98. 1990.

Exect annuals; stems triquetrous. Leaves 1.5–2.0 x 0.15–0.3 cm. Inflorescence axillary, with head-like clusters of spikelets. Males narrowly obovate; females, ovoid-oblong. Nuts depressed-globose hidden by connivent glumes.

*Fls. & Frts.* : October–November.

*Illus.* : C. B. Cl. Cyp. t. 134, f. 3. 1909.

*Distrib.* : Rare in shady places. Sindhudurg (S.M. Almeida, *op.cit.*).

#### ELEOCHARIS R. Br.

1. Stems usually stout; glumes subrigid, smooth or striate, not or scarcely keeled : *E. dulcis*
2. Stems terete, transversely septate when dry; nuts smooth ... *E. dulcis*
2. Stems subtriquetrous below the spikelet, not septate; nuts longitudinally striate: *E. acutangula*
3. Spikelets acute; glumes ovate, subacute ... *E. acutangula*
3. Spikelets obtuse; glumes quadrate, rounded or subtruncate ... *E. spiralis*

1. Stems usually slender; glumes membranous, usually 1-3-nerved, keeled :
  4. Style 3-fid ... *E. retroflexa*
  4. Style 2-fid :
    5. Bristles 3-4 (-6), shorter than or as long as nut, glistening white ... *E. atropurpurea*
    5. Bristles 6-8, slightly longer than the nut, brown or rusty ... *E. geniculata*

*Eleocharis acutangula* (Roxb.) J.A. Schult. in R. & S. Mant. 2: 91.1824; Kern in Steenis, Fl. Males. 1, 7: 525.1974. *Scirpus acutangulus* Roxb. Fl. Ind. 1: 216. 1820. *Eleocharis fistulosa* Schult. in R. & S. Mant. 2: 89.1824; C.B.Cl. in Hook. f. Fl. Brit. India 6: 626.1893; Cooke, Fl. Pres. Bombay 3: 402.1958 (Repr.ed.).

Perennial, rhizomatous herbs with long stolons; stems tufted, somewhat spongy. Sheaths loose, membranous. Spikelets cylindrical, dusky green, 2.0-3.5 cm; glumes firm, loosely imbricate, oblong-ovate, c 0.4 cm long, many nerved; bristles 6-7, unequal in length. Nuts 0.15-0.2 x 0.14 cm, turgid, unequally biconvex, ovate, constricted below.

Fls. & Frts. : October-December.

Illus. : Hooper in Sald. & Nicols. Fl. Hassan Dt. 656, f. 110 H. 1976; A.S. Rao & Verma, Cyp. N. E. India 24, f. 9-9a. 1982; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 786. 1982.

Distrib. : Kolhapur; Nagpur; Pune; Ratnagiri; Satara; Sindhudurg; Thane.

Notes : Cooke (op. cit.) stated that he had not seen any specimen from Bombay Presidency. Blatter & McCann (1934) reported this species from Maharashtra, N. Kanara and S.M. Country.

*E. atropurpurea* (Retz.) J. & K. Presl, Rel. Haenk. 1: 196. 1828; C. B. Cl. in Hook. f. Fl. Brit. India 6: 627.1893; Cooke, Fl. Pres. Bombay 3: 403.1958 (Repr. ed.); Kern in Steenis, Fl. Males. 1, 7: 536.1974. *Scirpus atropurpureus* Retz. Obs. Bot. 5: 14.1789.

Herbs, annual, erect, densely tufted, c 15 cm high. Spikelets c 0.2 cm long, oblong-ovoid, brown. Nuts c 0.1 cm long, obovate-oblong, biconvex, smooth, black.

Fls. & Frts. : July-January.

Illus. : C.B.Cl. Illustr. Cyper. t. 36 (6-9). 1909; Mahesh. Illus. Fl. Delhi f. 219.1966; Ugemuge, Fl. Nagpur Dt. t. 169.1986; Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 652. 1988.

*Distrib.* : Ahmednagar; Bombay; Chandrapur; Kolhapur; Nagpur; Nasik; Osmanabad; Pune; Raigad; Sindhudurg; Thane.

*E. dulcis* (Burm. f.) Trin. ex Henschel, Vita Rumph. 186.1833; Kern in Steenis, Fl. Males. 1, 7: 529, f. 36.1974. *Andropogon dulce* Burm. f. Fl. Ind. 219.1768. *Eleocharis plantaginea* (Retz.) R. & S. Syst. Veg. 2: 150.1817; C.B.Cl. in Hook. f. Fl. Brit. India 6: 625.1893; Cooke, Fl. Pres. Bombay 3: 402.1958 (Repr. ed.).

Robust, stoloniferous, perennials; stems densely tufted, spongy. Spikelets cylindric, 2.0–4.5 cm long; glumes closely imbricate, oblong; bristles 6–8, exceeding the nut. Nuts obovate, biconvex, dark brown.

*Fls. & Frts.* : August–March.

*Illus.* : Kern in Steenis, *op. cit.* ; Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 653. 1988.

*Distrib.* : Bombay; Kolhapur; Nagpur; Ratnagiri; Satara; Sindhudurg; Thane.

*E. geniculata* (L.) R. & S. Syst. Veg. 2: 150.1817; Kern in Steenis, Fl. Males. 1, 7: 536. 1974. *Scirpus geniculatus* L. Sp. Pl. 48. 1753. *Eleocharis capitata* R. Br. Prodr. 225. 1810 *non Scirpus capitatus* L. 1753; C. B. Cl. in Hook. f. Fl. Brit. India 6: 627.1893; Cooke, Fl. Pres. Bombay 3: 404.1958 (Repr. ed.).

Herbs, erect, densely tufted, c 15 cm high. Spikelets 0.3–0.7 x 0.3–0.7 cm, globose-ovoid, greenish-yellow or brown. Nuts c 0.1 cm long, globose-ovoid, brown, smooth, shining.

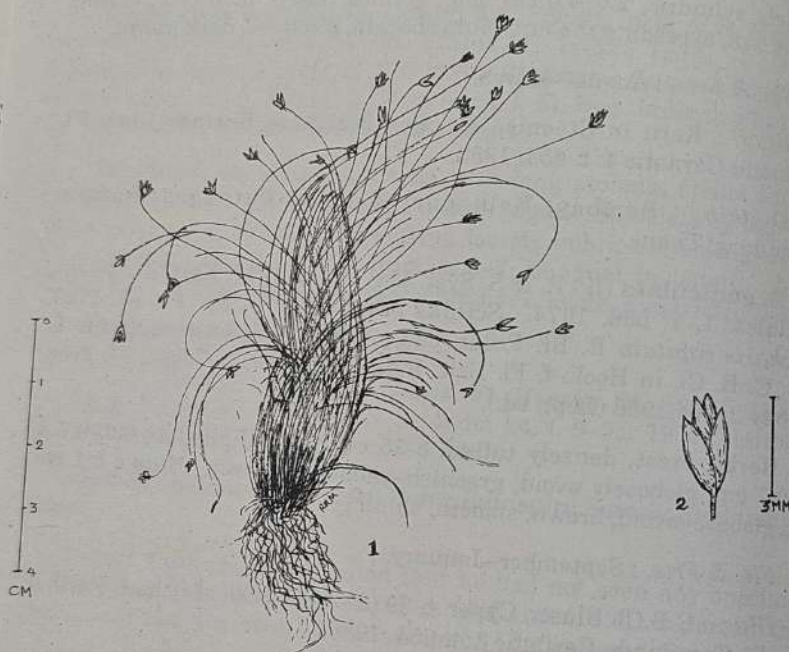
*Fls. & Frts.* : September–January.

*Illus.* : C.B.Cl. Illustr. Cyper. t. 39 (22–26). 1909; Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 654. 1988.

*Distrib.* : Ahmednagar; Akola; Amaravati; Buldhana; Chandrapur; Dhule; Kolhapur; Nagpur; Nasik; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane; Yavatmal.

*E. retroflexa* (Poir.) Urb. Symb. Antill. 2: 165.1900; Kern in Steenis, Fl. Males. 1, 7: 534.1974. *Scirpus retroflexus* Poir. in Lam. Encycl. 6: 753. 1804. *Eleocharis chaetaria* R. & S. Syst. Veg. 2: 154. 1817; C. B. Cl. in Hook. f. Fl. Brit. India 6: 629. 1893; Cooke, Fl. Pres. Bombay 3: 404.1958 (Repr. ed.).

Herbs, tufted, gregarious, annual; stems angular, often curved, 5–10 cm tall. Sheaths reddish at base. Spikelets 0.15–0.20 cm long, compressed; glumes 0.25 cm long, boat-shaped or ovate, membranous,



*Eleocharis retroflexa* (Poir.) Urb.  
1. Habit 2. Spikelet

3-nerved, mi  
to yellowish,  
0.07-0.08 x 0

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Illus. :

1988.

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plains. Ratn

*E. spi*  
f. Fl. Brit.  
(Repr. ed.);  
Rottb. Desc

Herbs  
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obovoid, bi

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Illus.

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*Erio*  
Bot. Ind.  
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Fls.

Illu  
op. cit. ;

Dis  
Akola; A

3-nerved, midnerve greenish, sides reddish, bristles 6, unequal, white to yellowish, scabrous, longer than nuts; stamens 3; stigmas 3. Nuts 0.07-0.08 x 0.06-0.07 cm, obovoid, conspicuously cancellate.

*Fls. & Frts.* : January-March.

*Illus.* : Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 655. 1988.

*Distrib.* : Scattered in open, moist places and along streams in plains. Ratnagiri; Satara; Sindhudurg.

*E. spiralis* (Rottb.) R. & S. Syst. Veg. 2: 155. 1817; C.B.Cl. in Hook. f. Fl. Brit. India 6: 627. 1893; Cooke, Fl. Pres. Bombay 3: 403. 1958 (Repr. ed.); Kern in Steenis, Fl. Males. 1, 7: 527. 1974. *Scirpus spiralis* Rottb. Descr. & Ic. Rar. 45, t. 15, f. 1. 1773.

Herbs; stems up to 70 cm tall, 0.3 cm across, erect, triquetrous upwards. Sheaths obliquely attenuate, mucronate. Spikelets 1.5 x 0.3 cm, terete, oblong; glumes 0.3-0.4 cm, many, spirally arranged, suborbicular. Hypogynous bristles 4-6, subequal. Nuts c 0.15 cm long, obovoid, biconvex, glossy, apically annular, fulvous.

*Fls. & Frts.* : August-December.

*Illus.* : C. B. Cl. Illustr. Cyper. t. 35 (5-7). 1909; Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 656. 1988.

*Distrib.* : Bombay; Raigad; Ratnagiri; Thane.

#### ERIOPHORUM L.

*Eriophorum comosum* (Wall.) Wall. ex Nees in Wight, Contrib. Bot. Ind. 110. 1834; C. B. Cl. in Hook. f. Fl. Brit. India 6: 664. 1893; Cooke, Fl. Pres. Bombay 3: 411. 1958 (Repr. ed.); A.S. Rao & Verma, Cyp. N.E. India 47, f. 28. 1982. *Scirpus comosus* Wall. in Roxb. Fl. Ind. 1: 234. 1820. '*Mohl-gavath*'.

Herbs, tufted, perennial; rhizomes woody. Leaves linear, longer than stems. Inflorescence of terminal, decompound umbels. Spikelets c 0.6 cm long, elliptic-oblong, reddish-brown. Nuts c 0.2 x 0.1 cm, linear-oblong, trigonous.

*Fls. & Frts.* : August-December.

*Illus.* : C. B. Cl. Illustr. Cyper. t. 57(6-7). 1909; A.S. Rao & Verma, op. cit.; Lakshminarasimhan & Sharma, Fl. Nasik Dt. 505, f. 43. 1991.

*Distrib.* : Frequent in ghats on stiff rocky walls. Ahmednagar; Akola; Amaravati; Aurangabad; Buldhana; Dhule; Nasik; Pune.

FIMBRISTYLIS Vahl (*nom. cons.*)

1. Lower glumes of spikelets distichous or nearly so; upper fertile glumes spirally placed :
  2. Nuts 0.2-0.3 x 0.15-0.2 cm, coarsely tuberculate, rarely smooth ... *F. ovata*
  2. Nuts much smaller, smooth or verruculose ... *F. cinnamometorum*
1. Lowest fertile glumes of the spikelets spirally imbricate:
  3. Stems with one spikelet (rarely 2 to 3) :
    4. Nuts trigonous ...
    4. Nuts biconvex :
      5. Nuts subcylindrical, oblong-linear ... *F. kingii*
      5. Nuts obcordate, obovoid, oblong-obovoid, orbicular, pyriform or turbinate :
        6. Nuts coarsely rugulose by transverse wavy ridges ... *F. tetragona*
        6. Nuts smooth :
          7. Style sparsely ciliate at the tip ... *F. acuminata*
          7. Style glabrous ... *F. polytrichoides*
    3. Stems with many or several spikelets :
      8. Style 3-fid :
        9. Spikelets clustered:
          10. Stamen 1 ... *F. merrillii*
          10. Stamens 3 :
            11. Spikelets subterete ... *F. woodrowii*
            11. Spikelets compressed or trigonous ... *F. lawiana*
        9. Spikelets all-or nearly all-solitary :
          12. Spikelets few (sometimes 3-1) :
            13. Stamens 1 or 2; nuts creamish-white ... *F. falcata*
            13. Stamens 3; nuts yellowish-brown ... *F. tenera*
          12. Spikelets many:
            14. Nuts slender, trabeculate :
              15. Style hairy; glumes acute, mucronate; rhachilla winged ... *F. monticola*
              15. Style glabrous; glumes obtuse, not mucronate; rhachilla wingless... *F. miliacea*

*F. littoralis*

14. Nuts tubercular, not trabeculate :
16. Spikelets small, c 0.1 cm wide; glumes c 0.1 cm long; style c 0.05 cm long ... *F. microcarya*
16. Spikelets larger, 0.13–0.25 cm wide; glumes c 0.25 cm long; style 0.1–0.2 cm long ... *F. complanata*
8. Style 2-fid:
17. Spikelets 3–20, clustered:
18. Stems with only one head ... *F. argentea*
18. Clusters of spikelets subumbellately corymbose ... *F. hookeriana*
17. Spikelets all (or nearly all) solitary except in *F. dichotoma* occasionally clustered and in *F. cymosa* the umbel dense, sometimes congested into a head:
19. Spikelets few (often 3–1)
20. Stamens 2 ... *F. unispicularis*
20. Stamens 3 ... *F. schoenoides*
19. Spikelets many or several [but, even in the case of species with compound umbel some with few (at times 1) spikelets occur] :
21. Nuts linear-cylindric, curved ... *F. dipsacea*
21. Nuts obovoid :
22. Nuts conspicuously longitudinally striate, trabeculate:
23. Spikelets 0.2–0.4 cm wide; glumes usually with 2 to 4 lateral nerves ... *F. dichotoma*
23. Spikelets 0.12–0.18 cm wide; glumes usually without distinct lateral nerves ... *F. bisumbellata*
22. Nuts smooth, reticulate :
24. Leaves without a ligule :
25. Annuals; style dorsiventrally flattened, fimbriate above ... *F. aestivalis*
25. Perennials; style weakly flattened, not fimbriate ... *F. cymosa*
24. Leaves with a ligule, usually of a fringe of dense pubescence :
26. Glumes hairy on upper half or puberulous all over; nut faintly striolate :
27. Annuals; rhizome absent; glumes puberulous ... *F. pubisquama*
27. Perennials; rhizomes present; glumes not as above :

28. Lower sheaths coriaceous, shining brown or castaneous; blades of cauline leaves rather short, up to 10.0 x 0.05–0.15 cm; involucre bracts usually shorter than inflorescence; spikelets acute; glumes pubescent, ferruginous ... *F. ferruginea*
28. Lower sheaths herbaceous, stramineous or ferruginous; blades of cauline leaves long, up to 30.0 x 0.15–0.2 cm; lowest involucre bract usually overtopping the inflorescence; spikelets obtuse; glumes densely tomentose, usually dark brown ... *F. sieberiana*
26. Glumes glabrous; nut vertically ridged:
29. Spikelets (0.25–) 0.3–0.4 cm wide; glumes c 0.35 cm long; gynophore conspicuous, 0.03–0.05 cm long; nut with obtuse, thickened edges ... *F. tomentosa*
29. Spikelets 0.2–0.25 cm wide; glumes 0.2–0.25 cm long; gynophore inconspicuous; edges of nut not thickened ... *F. albo-viridis*

**Fimbristylis acuminata** Vahl, Enum. Pl. 2: 285.1806; C.B.Cl. in Hook. f. Fl. Brit. India 6: 631.1893; Kern in Steenis, Fl. Males. 1, 7: 588.1974.

Herbs, perennial; rhizomes short, stems slender, tufted, 10–20 cm tall, angled. Leaves reduced to sheaths. Spikelets solitary, terminal, 0.6–1.0 cm long, ovoid, terete; glumes spiral, ovate, reddish-brown, slightly keeled, apex obtuse or acute; stamens 2–3; stigmas 2. Nuts c 0.13 cm long, bi-convex, broadly obovate or orbicular, brownish.

Fls. & Frts. : August–February.

Illus. : C.B.Cl. Illustr. Cyper. t. 40 (5–7).1909.

Distrib. : Rare in wet grasslands and in harvested rice fields. Ratnagiri; Sindhudurg.

**F. aestivalis** (Retz.) Vahl, Enum. Pl. 2: 288.1806; C.B.Cl. in Hook. f. Fl. Brit. India 6: 637. 1893; Cooke, Fl. Pres. Bombay 3: 395. 1958 (Repr.ed.); Kern in Steenis, Fl. Males. 1, 7: 584. 1974. *Scirpus aestivalis* Retz. Obs. Bot. 4: 12. 1786.

1. Inflorescence glabrous

1. Inflorescence pilose

... var. *aestivalis*

... var. *trichopoda*

var. *aestivalis*.

Herbs, tufted, annual; stems 6–16 cm tall, angular. Leaves shorter than stems, narrow, apex acute; sheaths red-brown, membranous. Umbels compound, rays erect; spikelets few, oblong, c 0.4 cm long; bracts 3–5, exceeding umbels; glumes c 0.15 cm long, oblong, keel raised and excurrent, brown, lower glumes and bracts pubescent; stamen 1; stigmas 2. Nuts 0.05–0.06 x 0.03–0.04 cm, broadly elliptic, compressed.

Fls. & Frts. : Sep

Illus. : C.B.Cl. I  
Illus. Fl. Tamilnadu

Distrib. : Ah  
Kolhapur; Pune; Rai

var. *trichopoda*

Distrib. : Konk

**F. albo-viridis**  
J. Linn. Soc. 34: 60

Herbs, 10–20  
stems. Umbels sin  
long, obovoid, sub  
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Fls. & Frts.

Illus. : Kern

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**F. argentea**  
f. Fl. Brit. India  
ed.); Kern in St  
Rottb. Progr. 27

Herbs, sm  
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cm across; glum  
green herbaceo  
Nuts 0.05–0.07

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Illus. : T.  
316, f. 24. 198  
658. 1988.

Distrib. :

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(op. cit.). Bla  
Kanara.

*Fls. & Frts.* : September–June.

*Illus.* : C.B.Cl. *Illustr. Cyper.* t. 41 (14–15). 1909; Matthew, *Further Illus. Fl. Tamilnadu Carnatic* 4: t. 657. 1988.

*Distrib.* : Ahmednagar; Amaravati; Bombay; Chandrapur; Kolhapur; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

var. *trichopoda* Kern in *Blumea* 12: 27. 1963.

*Distrib.* : Konkan (Kern, *op. cit.*).

*F. albo-viridis* C.B.Cl. in Hook. f. *Fl. Brit. India* 6: 638. 1893 & in *J. Linn. Soc.* 34: 60. 1898; Kern in Steenis, *Fl. Males.* 1, 7: 580. 1974.

Herbs, 10–20 cm high, annual, erect, tufted. Leaves shorter than stems. Umbels simple; spikelets ovoid, 0.8 x 0.4 cm. Nuts 0.1–0.15 cm long, obovoid, suborbicular, biconvex, white or pale brown on the faces with many vertical rows of trabeculations.

*Fls. & Frts.* : September–October.

*Illus.* : Kern in Steenis, *op. cit.* 581, f. 46.

*Distrib.* : Bombay; Pune; Sindhudurg.

*F. argentea* (Rottb.) Vahl, *Enum. Pl.* 2: 294. 1806; C.B.Cl. in Hook. f. *Fl. Brit. India* 6: 640. 1893; Cooke, *Fl. Pres. Bombay* 3: 395. 1958 (Repr. ed.); Kern in Steenis, *Fl. Males.* 1, 7: 586. 1974. *Scirpus argenteus* Rottb. *Progr.* 27. 1772.

Herbs, small, annual; roots white, fibrous; stems c 8 cm tall, tufted, trigonous. Leaves shorter than stem, slender, glabrous, canaliculate; sheaths red dotted. Spikelets cylindric in heads, sessile, 1 cm across; glumes triangular-ovate, c 0.12 cm long, membranous, with a green herbaceous keel, brown or silvery grey; stamen 1; stigmas 2. Nuts 0.05–0.07 x 0.04–0.05 cm, orbicularly ovoid, pale.

*Fls. & Frts.* : February–March.

*Illus.* : T. Koyama in Dassan. & Fosb. *Rev. Handb. Fl. Ceylon* 5: 316, f. 24. 1985; Matthew, *Further Illus. Fl. Tamilnadu Carnatic* 4: t. 658. 1988.

*Distrib.* : Bombay; Chandrapur; Nagpur; Ratnagiri; Sindhudurg.

*Notes* : Cooke had included it on the authority of Dalzell & Gibson (*op. cit.*). Blatter & McCann (1934) reported it from Gujarat and N. Kanara.

**F. bis-umbellata** (Forssk.) Bub. Dodec. 30.1850; Kern in Steenis, Fl. Males. 1, 7: 579.1974. *Scirpus bis-umbellatus* Forssk. Fl. Aegypt. Arab. 15. 1755. *Fimbristylis dichotoma sensu* C. B. Cl. in Hook. f. Fl. Brit. India 6: 635.1893 non (L.) Vahl 1806.

Herbs, annual, caespitose; stems slender, 10–15 cm tall. Leaves flat, shorter than or as long as stems, pubescent, ligulate. Umbels compound, rays 2–3 cm long; spikelets ellipsoid, angled, rachilla elongated; glumes ovate-oblong, reddish-brown, c 0.12 cm long, with green, sharp spiculate keel; stigmas 2. Nuts 0.05–0.08 cm long, obovate, pale to dark brown.

Fls. & Frts. : May–December.

Illus. : Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 659. 1988.

Distrib. : Ahmednagar; Akola; Amaravati; Bhandara; Bombay; Buldhana; Nasik; Osmanabad; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane; Yavatmal.

**F. cinnamometorum** (Vahl) Kunth, Enum. Pl. 2: 229. 1837; Kern in Steenis, Fl. Males. 1, 7: 565. 1974; S.M. & M.R. Almeida in J. Bombay nat. Hist. Soc. 84: 258.1987. *Scirpus cinnamometorum* Vahl, Enum. Pl. 2: 278.1806. *Fimbristylis cyperoides* R. Br. var. *cinnamometorum* (Vahl) C. B. Cl. in Hook. f. Fl. Brit. India 6: 650.1893.

Perennials; rhizomes creeping, woody; stems solitary, compressed, angular. Leaves at least half as long as stem, erect, setaceous, rigid. Inflorescence compound or decompound, loose with many to numerous spikelets. Spikelets 0.4–0.5 x 0.1 cm, solitary, oblong or oblong-linear, few-flowered. Nuts obovoid or oblong-obovoid, shortly stipitate, umbonulate.

Fls. & Frts. : September–October.

Illus. : C.B.Cl. Illustr. Cyper. t. 44, f. 1–4.1909 (*Fimbristylis cyperoides* var. *cinnamometorum*); Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 660. 1988.

Distrib. : Sindhudurg.

**F. complanata** (Retz.) Link, Hort. Bot. Berol. 1: 292. 1827; C. B. Cl. in Hook. f. Fl. Brit. India 6: 646.1893; Cooke, Fl. Pres. Bombay 3: 400. 1958 (Repr.ed.); Kern in Steenis, Fl. Males. 1, 7: 548.1974. *Scirpus complanatus* Retz. Obs. Bot. 5: 14. 1789.

Perennials; rhizomes short; stems deeply grooved, ribbed. Leaves shorter than stems, linear, scabrid on margins. Inflorescence a

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*Fimbristylis*

6: 636.1893

(Repr. ed.).

637. *F. ann*

nat. Hist. S

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Fls. &

compound umbel. Spikelets 0.3–0.6 cm long, ovoid-oblong, brown. Nuts stipitate, obtusely trigonous, minutely warted.

*Fls. & Frts.* : July–December.

*Illus.* : Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 661. 1988.

*Distrib.* : Ahmednagar; Amaravati; Buldhana; Dhule; Kolhapur; Nagpur; Nasik; Osmanabad; Pune; Thane; Yavatmal.

*F. cymosa* R. Br. Prodr. 228.1810; Kern in Reinwardtia 6: 39. 1961 & in Steenis, Fl. Males. 1, 7: 557.1974. *F. spathacea* Roth, Nov. Pl. Sp. 24.1821; C.B.Cl. in Hook. f. Fl. Brit. India 6: 640. 1893; Cooke, Fl. Pres. Bombay 3: 296. 1958 (Repr. ed.).

Herbs, shortly rhizomatous, perennial; stems tufted, rigid, 10–20 cm tall, swollen at base, many-leaved at base. Leaves much shorter than stem, narrow, flat, abruptly acuminate, scabrid along margins. Umbels compound, often contracted, bracts 2–3, short, rigid; spikelets ellipsoid, 0.3–0.5 cm long, rhachilla broadly winged; glumes broadly ovate, obtuse, notched, keeled, ferruginous, 0.1–0.2 cm long; stigmas 2–3. Nuts 0.07–0.1 x 0.05 cm, obovate, shortly stipitate, black, tubercled.

*Fls. & Frts.* : August–December.

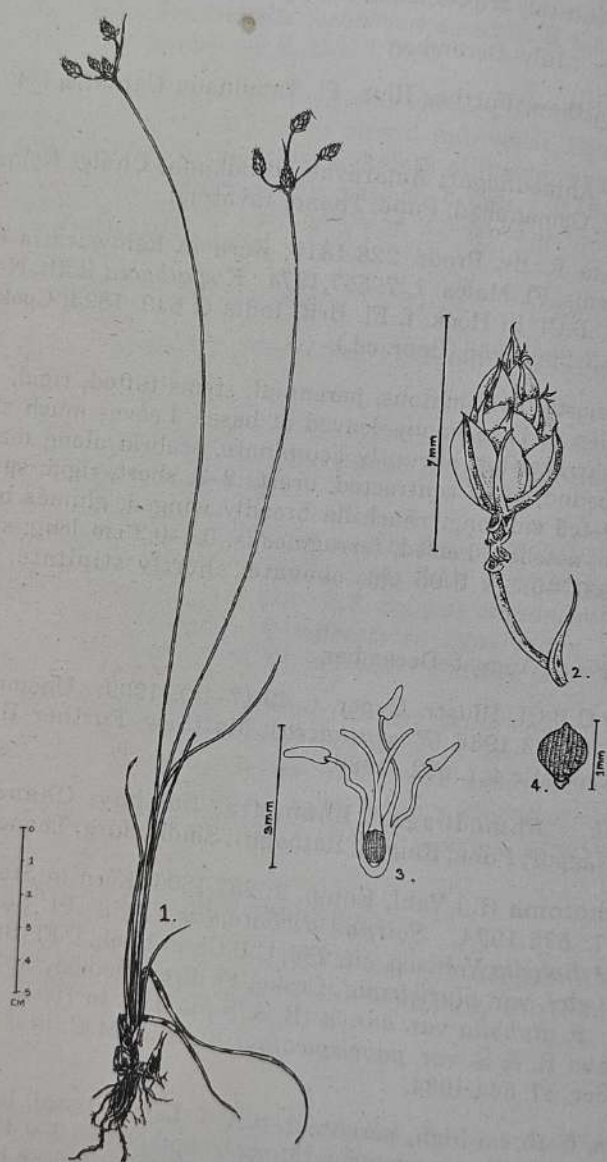
*Illus.* : C.B.Cl. Illustr. Cyper. t. 43 (7–11). 1909; Ugemuge, Fl. Nagpur Dt. t. 173.1986 (*F. spathacea*); Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 662. 1988.

*Distrib.* : Ahmednagar; Bhandara; Bombay; Chandrapur; Kolhapur; Nagpur; Pune; Raigad; Ratnagiri; Sindhudurg; Thane.

*F. dichotoma* (L.) Vahl, Enum. 2: 287.1806; Kern in Steenis, Fl. Males. 1, 7: 575.1974. *Scirpus dichotomus* L. Sp. Pl. 50. 1753. *Fimbristylis diphylla* Vahl, *op. cit.* 289; C.B.Cl. in Hook. f. Fl. Brit. India 6: 636.1893 excl. var. *pluristriata*; Cooke, Fl. Pres. Bombay 3: 396.1958 (Repr. ed.). *F. diphylla* var. *annua* (R. & S.) C.B.Cl. in Hook. f. *op. cit.* 637. *F. annua* R. & S. var. *paucispiculata* Blatt. & McC. in J. Bombay nat. Hist. Soc. 37: 544.1934.

Herbs, 6–15 cm high, perennial, tufted. Leaves basal, linear, 4–7 cm long. Inflorescence a compound umbel. Spikelets 0.2–0.4 x 0.1–0.2 cm, ellipsoid-oblong or ovoid-oblong, greenish-brown or brownish. Nuts 0.07–0.12 cm long, biconvex, minutely stipitate, conspicuously tuberculate.

*Fls. & Frts.* : July–March.



*Fimbristylis dichotoma* (L.) Vahl  
 1. Habit 2. Spikelet 3. Spikelet cut open 4. Nut

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*Illus.* : Mahesh. *Illus.* Fl. Delhi f. 223.1966; A.S. Rao & Verma, *Cyp. N.E. India* 33, f. 17. 1982; Ugemuge, *Fl. Nagpur Dt.* t. 171. 1986; Matthew, *Further Illus. Fl. Tamilnadu Carnatic* 4: t. 662. 1988.

*Distrib.* : Common in all districts.

*F. dipsacea* (Rottb.) C.B.Cl. in Hook. f. *Fl. Brit. India* 6: 635. 1893; Kern in Steenis, *Fl. Males.* 1, 7: 590. 1974. *Scirpus dipsaceus* Rottb. *Descr. & Ic. Pl.* 56, t. 12, f. 1. 1773. *Echinolytrum dipsaceum* (Rottb.) Desv. in *J. Bot.* 1: 21, t. 1. 1808; Fernandez in *J. Bombay nat. Hist. Soc.* 61: 474, t. 1. 1964.

Annuals, densely tufted, 2–15 cm tall. Leaves reduced to short-bladed sheath, 2–4 per culm, blades narrowly linear to setaceous. Corymbs simple, unbelliform or a cluster of 2–3 spikelets, or reduced to a single spikelet. Achenes 0.05–0.07 x 0.017 cm, linear-oblong, thickly biconvex.

*Fls. & Frts.* : May–June.

*Illus.* : C.B.Cl. *Illustr. Cyper.* t. 41 (4–7).1909; Fernandez, *op. cit.*; A.S. Rao & Verma, *Cyp. N.E. India* 33, t. 16–16b. 1982; Matthew, *Further Illus. Fl. Tamilnadu Carnatic* 4: t. 664. 1988.

*Distrib.* : Bombay; Pune; Ratnagiri; Sindhudurg.

*F. falcata* (Vahl) Kunth, *Enum. Pl.* 2: 239.1837; Kern in *Blumea* 8: 113.1955 & in Steenis, *Fl. Males.* 1, 7: 557.1974. *Scirpus falcatus* Vahl, *Enum. Pl.* 2: 275.1806. *Fimbristylis junciformis* Kunth, *Enum. Pl.* 2: 239. 1837; C.B.Cl. in Hook. f. *Fl. Brit. India* 6: 647.1893; Cooke, *Fl. Pres. Bombay* 3: 400.1958 (Repr. ed.).

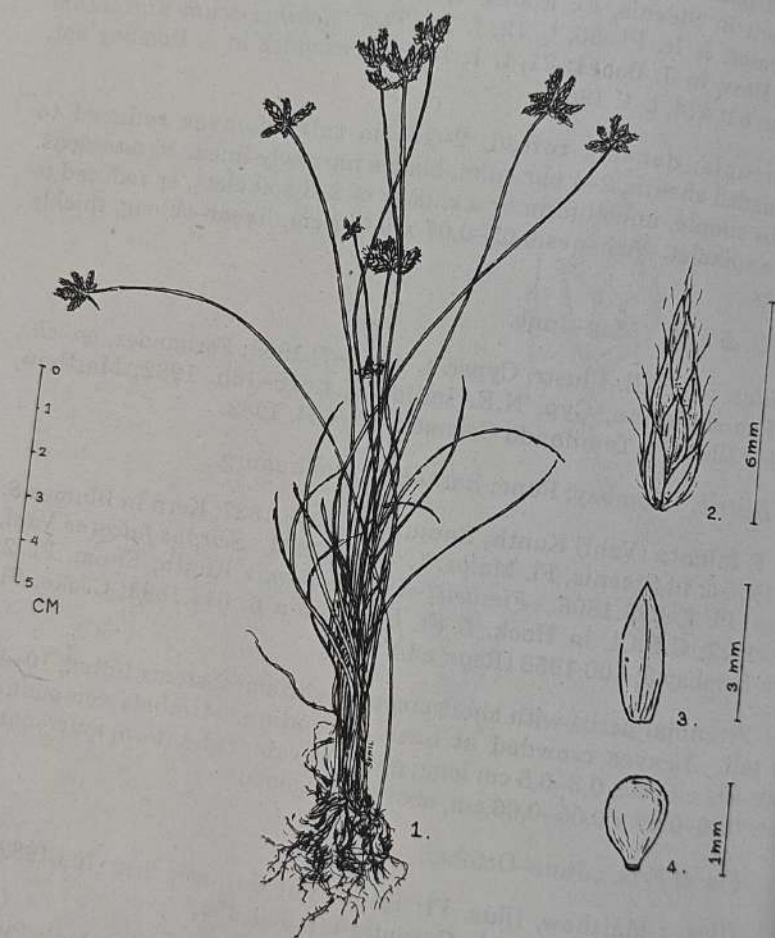
Perennial herbs with short creeping rhizomes; stems tufted, 10–40 cm tall. Leaves crowded at base, spreading. Umbels compound. Spikelets elliptic, 0.3–0.5 cm long; glumes ovate, red-brown, mucronate. Nuts 0.06–0.09 x 0.05–0.06 cm, obovoid, trigonous.

*Fls. & Frts.* : June–October.

*Illus.* : Matthew, *Illus. Fl. Tamilnadu Carnatic* 2: t. 708.1982 & *Further Illus. Fl. Tamilnadu Carnatic* 4: t. 666. 1988.

*Distrib.* : Chandrapur; Kolhapur; Nagpur; Osmanabad; Pune; Sindhudurg.

*F. ferruginea* (L.) Vahl, *Enum. Pl.* 2: 291.1806; C. B. Cl. in Hook. f. *Fl. Brit. India* 6: 638.1893; Cooke, *Fl. Pres. Bombay* 3: 396. 1958 (Repr. ed.); Kern in Steenis, *Fl. Males.* 1, 7: 572.1974. *Scirpus ferrugineus* L. *Sp. Pl.* 50. 1753.



*Fimbristylis lawiana* (Boeck.) Kern  
1. Habit 2. Spikelet 3. Glume 4. Nut

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Herbs, perennial, tufted; rhizomes woody; culms 15–75 cm tall. Leaves narrowly linear, 1–15 x 0.06–0.25 cm. Inflorescence of simple or subcompound umbels. Spikelets 0.8–1.5 x 0.25–0.4 cm, ovate-lanceolate. Nuts 0.1–0.12 cm long, biconvex, shortly stipitate, umbonate.

Fls. & Frts. : September–February.

Illus. : C. B. Cl. Illustr. Cyper. t. 42(9–10). 1909; Mahesh. Illus. Fl. Delhi f. 222. 1966; Hooper & Napper in Hepper, Fl. W. Trop. Afr. 3(2) : 322, f. 409. 1972; Ugemuge, Fl. Nagpur Dt. t. 172. 1986; Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 667. 1988.

Distrib. : Ahmednagar; Akola; Beed; Bombay; Dhule; Jalgaon; Kolhapur; Nagpur; Nasik; Osmanabad; Pune; Ratnagiri; Satara; Sindhudurg; Thane.

*F. hookeriana* Boeck. in Linnaea 37: 22. 1891; C.B.Cl. in Hook. f. Fl. Brit. India 6: 641. 1893; Vartak & Ghate in J. Econ. Tax. Bot. 4: 444. 1983.

Annuals; stem 10–25 cm long, tufted, compressed. Leaves often as long as stem, narrow, flat. Umbels often 10–15 cm in diam. Spikelets 1–6 in a cluster, 1.2 x 0.2–0.25 cm, terete. Nuts as long as 1/5–1/4 glumes, biconvex, obtuse, shortly stalked, slender, longitudinally 12–15-ribbed.

Illus. : A.S. Rao & Verma, Cyp. N.E. India 33, f. 20–20a. 1982.

Distrib. : Raigad (Vartak & Ghate, *op. cit.*).

*F. kingii* C. B. Cl. ex Boeck. Cyp. Nov. 2: 40. 1888; C. B. Cl. in Hook. f. Fl. Brit. India 6: 633. 1893; S.M. & M.R. Almeida in J. Bombay nat. Hist. Soc. 84: 258. 1987.

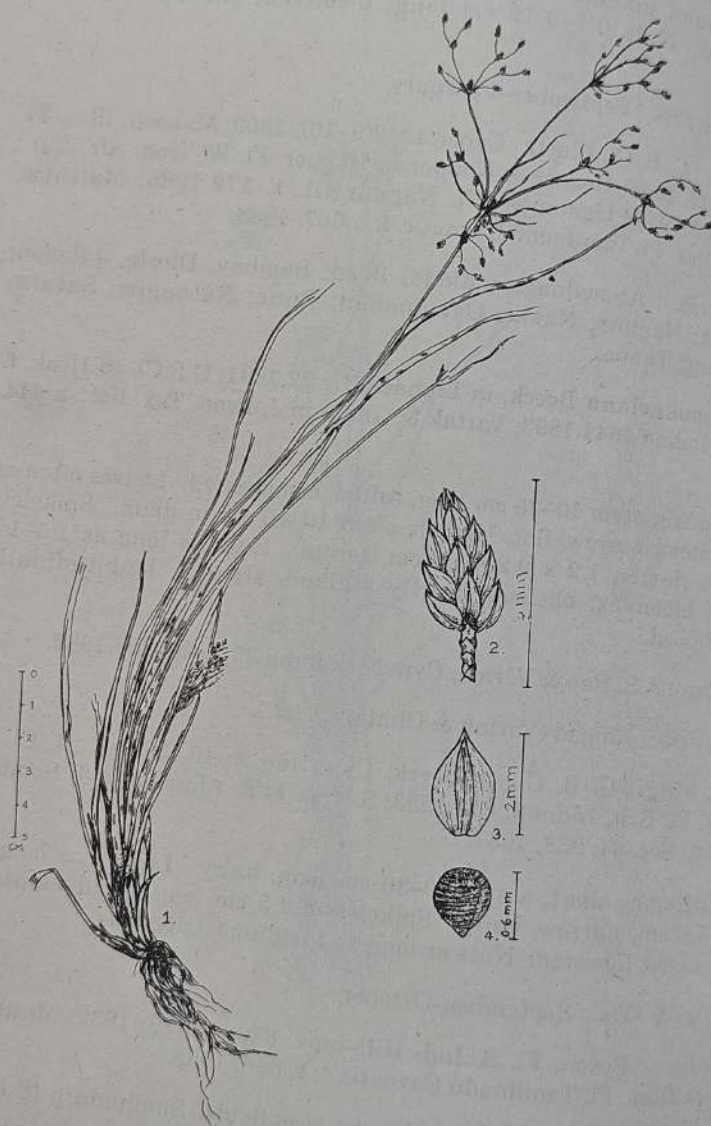
Rhizomes short; stems 10–30 cm long, hairy. Leaves as long as 1/3–2/3 stem, narrow, hairy. Spikelets c 2.5 cm long, ovoid-ellipsoid, terete, dense flowered. Nuts as long as 1/3 glume, trigonous.

Fls. & Frts. : September–October.

Illus. : Fyson, Fl. S. Ind. Hill-tops. 638, t. 575. 1932; Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 668. 1988.

Distrib. : Rare in water logged rice-fields. Sindhudurg (S.M. & M.R. Almeida, *op. cit.*).

*F. lawiana* (Boeck.) Kern in Reinwardia 4: 96. 1956. *Scirpus lawianus* Boeck. in Linnaea 36: 497. 1869–70. *Fimbristylis digitata*



*Fimbristylis littoralis* Gaud.  
1. Habit 2. Spikelet 3. Glume 4. Nut

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Boeck. in Flora 61: 35.1875; C. B. Cl. in Hook. f. Fl. Brit. India 6: 648.1893; Cooke, Fl. Pres. Bombay 3: 398.1958 (Repr.ed.).

Herbs, 8–15 cm high, erect; stems caespitose from bulbous bases. Leaves 5.0–8.5 cm long, narrowly linear, scabrid on margins. Inflorescence a terminal head consisting of 3–5 umbellately arranged spikelets; spikelets 0.3–0.7 x 0.1–0.2 cm, ovoid-oblong or ellipsoid, whitish or straw coloured. Nuts c 0.1 cm long, globosely obovoid, scarcely stipitate, faintly lineolate.

Fls. & Frts. : June–September.

Distrib. : Kolhapur; Nasik; Pune; Raigad; Ratnagiri; Thane.

*F. littoralis* Gaud. in Freyc. Voy. Bot. 413.1826; Kern in Steenis, Fl. Males. 1, 7: 551.1974. *F. miliacea* sensu Bth. Fl. Austral. 316.1878; C. B. Cl. in Hook. f. Fl. Brit. India 6: 644.1893 p.p. *omne non* Vahl, 1806 non *Scirpus miliaceus* L.; Cooke, Fl. Pres. Bombay 3: 397.1958 (Repr.ed.).

Herbs, c 15 cm high. Leaves distichous, shorter or equalling the stem, laterally compressed. Inflorescence 5–6 cm long; bracts c 2 cm long. Spikelets solitary, ovoid-oblong, 2–5 cm long; glumes ovate, c 1 cm long, brown, midrib green. Nuts obovoid, 1 cm long, white, becoming brown, verruculose.

Fls. & Frts. : June–August.

Distrib. : Chandrapur; Nagpur; Raigad; Satara; Thane.

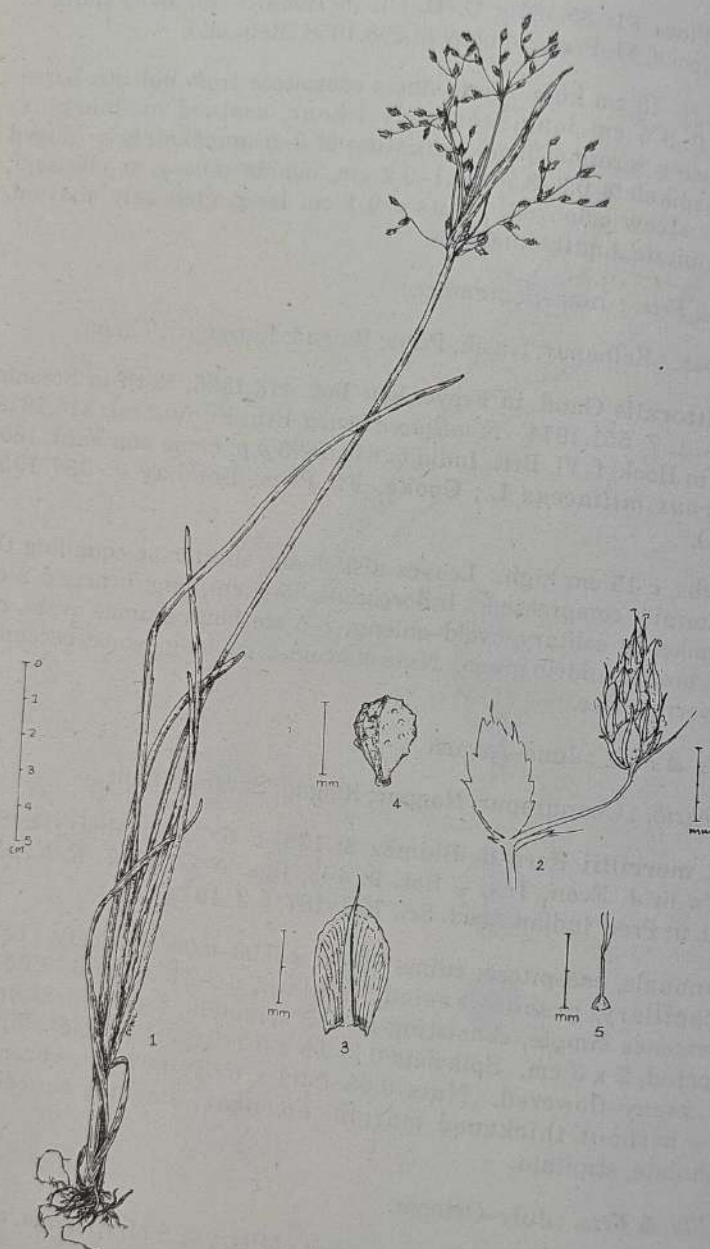
*F. merrillii* Kern in Blumea 8: 135, t. 6. 1955; Mistry & S.M. Almeida in J. Econ. Tax. – Bot. 9: 403, figs. A–G. 1987. *F. ligulata* Govind. in Proc. Indian Acad. Sci. 76B: 187, f. 3. 1972.

Annuals, caespitose; culms 10–25 x 0.03–0.04 cm, leafy. Leaves few, capillary, gracile, keeled, ligulate, 10–15 x 0.03–0.05 cm. Inflorescence simple, consisting of 1–3 spikelets, erect, spreading or superposed, 2 x 3 cm. Spikelets 0.3–0.6 x 0.1–0.25 cm, ovoid-ellipsoid, acute, many-flowered. Nuts 0.08–0.09 x 0.06–0.07 cm, obcordate, yellow without thickened margin, biconvex, smooth, cancellate, umbonulate, stipitate.

Fls. & Frts. : July–October.

Illus. : Kern, *op.cit.*; Govind. *op.cit.*; Mistry & S.M. Almeida, *op.cit.*

Distrib. : Ahmednagar; Bombay; Nasik; Osmanabad; Pune; Ratnagiri; Sindhudurg.



*Fimbristylis microcarya* F. v. Muell.  
1. Habit 2. Spikelet 3. Glume 4. Nut 5. Style & Stigma

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Notes : Mistry and S.M. Almeida, *op.cit.* 403-406 have attempted to point out the correct identity and data on the occurrence of *F. merrillii* in India. The differences between *F. merrillii* and *F. dichotoma* have been tabulated.

*F. microcarya* F. v. Muell. *Fragm. Phytogr. Austr.* 1: 200. 1859; Kern in Steenis, *Fl. Males.* 1, 7: 550. 1974. *F. complanata* var. *microcarya* (F. v. Muell.) C.B.Cl. in Hook. f. *Fl. Brit. India* 6: 646. 1893 (Err. '*microcarpa*'); Cooke, *Fl. Pres. Bombay* 3: 400. 1958 (Repr. ed.); Blatt. & McC. in *J. Bombay nat. Hist. Soc.* 37: 648. 1934.

Herbs, 10-45 cm high, erect, annual. Umbels decompound, lax. Spikelets c 0.05-0.15 cm, ovoid or ellipsoid-lanceolate, brown. Nuts c 0.5 cm long, obovoid, trigonous, minutely tubercled, pale white or brownish.

*Fls. & Frts.* : September-October.

*Distrib.* : Ahmednagar; Aurangabad; Bhandara; Chandrapur; Dhule; Nasik; Pune; Ratnagiri; Sindhudurg; Wardha.

*F. miliacea* (L.) Vahl, *Enum. Pl.* 2: 287. 1806 *emend.* S.T. Blake in *J. Arnold Arbor.* 35: 216. 1954; C. B. Cl. in Hook. f. *Fl. Brit. India* 6: 644. 1893; Kern in Steenis, *Fl. Males.* 1, 7: 552. 1974. *Scirpus miliaceus* L. *Syst. Veg.* ed. 10, 2: 868. 1759. *Fimbristylis quinquangularis* Kunth, *Enum. Pl.* 2: 229. 1807; C.B. Cl. in Hook. f. *op.cit.*; Cooke, *Fl. Pres. Bombay* 3: 397. 1958 (Repr. ed.).

Annuals; roots fibrous; stems tufted, up to 33 cm high. Leaves 10-22 cm long, linear, scabrid on margins. Inflorescence of decompound, lax umbels. Spikelets 0.1-0.2 cm long, ellipsoid or ovoid, greenish-brown. Nuts c 0.1 cm long, obovoid, shortly stipitate, slightly umbonate.

*Fls. & Frts.* : June-February.

*Illus.* : C. B. Cl. *Illustr. Cyper. t.* 43 (4-6). 1909 (*F. quinquangularis*); Mahesh. *Illus. Fl. Delhi* f. 225. 1966; Matthew, *Further Illus. Fl. Tamilnadu Carnatic* 4: t. 669. 1988.

*Distrib.* : Ahmednagar; Akola; Amaravati; Bhandara; Bombay; Kolhapur; Nagpur; Nasik; Pune; Raigad; Ratnagiri; Sindhudurg; Thane.

*F. monticola* Hochst. ex Steud. *Syn. Pl. Glum.* 2: 111. 1855; C.B.Cl. in Hook. f. *Fl. Brit. India* 6: 642. 1893; Cooke, *Fl. Pres. Bombay* 3: 399. 1958; T. Koyama in Dassan. & Fosb. *Rev. Handb. Fl. Ceylon* 5: 291. 1985.

Herbs, annual, tufted. Leaves half as long as stems, filiform, margins scabrid. Inflorescence of subsimple or subcompound umbels. Spikelets linear or ellipsoid-lanceolate, terminal. Nuts 0.07-0.08 x 0.06-0.07 cm, globosely obovoid, stipitate, tuberculate.

Fls. & Frts. : August-December.

Illus. : T. Koyama in Dassan. & Fosb. *op. cit.* 292, t. 22.

Distrib. : Ahmednagar; Aurangabad; Dhule; Kolhapur; Nagpur, Nasik; Parbhani; Pune; Ratnagiri; Thane.

**F. ovata** (Burm. f.) Kern in Blumea 15: 126. 1967 & in Steenis, Fl. Males. 1, 7: 565. 1974. *Carex ovata* Burm. f. Fl. Ind. 194. 1768. *Fimbristylis monostachyos* (L.) Hassk. Pl. Jav. Rar. 61. 1848 ('monostachya'); C.B.Cl. in Hook. f. Fl. Brit. India 6: 649. 1893; Cooke, Fl. Pres. Bombay 3: 399. 1958 (Repr. ed.).

Herbs, perennial, densely tufted; rhizomes short. Leaves filiform, margins scabrid, shorter than stems. Spikelets terminal, yellow or straw coloured, ovoid. Nuts 0.2-0.25 x 0.13-0.15 cm, pyriform, sessile, umbonate, tubercled.

Fls. & Frts. : August-November.

Illus. : Mahesh. Illus. Fl. Delhi f. 221. 1966 (*Fimbristylis monostachyos*); Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 670. 1988.

Distrib. : Akola; Amaravati; Bhandara; Bombay; Chandrapur; Kolhapur; Nagpur; Nasik; Osmanabad; Pune; Ratnagiri; Satara; Sholapur; Thane; Yavatmal.

**F. polytrichoides** (Retz.) Vahl, Enum. Pl. 2: 248. 1806; C. B. Cl. in Hook. f. Fl. Brit. India 6: 632. 1893; Cooke, Fl. Pres. Bombay 3: 393. 1958 (Repr. ed.); Kern in Steenis, Fl. Males. 1, 7: 586. 1974; S.M. & M.R. Almeida in J. Bombay nat. Hist. Soc. 84: 258. 1987. *Scirpus polytrichoides* Retz. Obs. Bot. 4: 11. 1786.

Perennial herbs; stems slender, leafy. Leaves as long as or longer than stem, wiry. Spikelets in solitary heads, oblong, ellipsoid; glumes linear-oblong or cymbiform, straw coloured or white. Nuts 0.08-0.1 x 0.05 cm, turbinate, compressed, yellow (rarely brown), dotted with white spots.

Fls. & Frts. : August-October.

Illus. : C. B. Cl. Illustr. Cyper. t. 40(8-9). 1909; Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 672. 1988.

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*Distrib.* : Bombay; Kolhapur; Raigad; Sindhudurg; Thane.

*F. pubisquama* Kern in Blumea 8: 131. 1955; S.M. Almeida, Fl. Savantwadi 2: 84. 1990. *F. compressa* Boeck. in Linnaea 38: 387. 1874 non R. & S. 1817; C. B. Cl. in Hook. f. Fl. Brit. India 6: 639. 1893.

Annuals, densely tufted; roots golden-yellow; stem angular. Leaves narrow; sheaths hairy. Corymbs compound, bracteate. Spikelets compressed, ovoid-ellipsoid, deeply rusty-brown, hairy; floral glumes imbricate, rusty-brown pubescent with short hairs, ciliate on margins. Nuts obovoid, yellowish-brown.

*Fls. & Frts.* : August–September.

*Distrib.* : A few, along marshy places. Sindhudurg (S.M. Almeida, op. cit.)

*F. schoenoides* (Retz.) Vahl, Enum. Pl. 2: 286. 1806; C.B.Cl. in Hook. f. Fl. Brit. India 6: 634. 1893; Cooke, Fl. Pres. Bombay 3: 394. 1958 (Repr. ed.); Kern in Steenis, Fl. Males. 1, 7: 573. 1974. *Scirpus schoenoides* Retz. Obs. Bot. 5: 14. 1789.

Herbs, perennial; rhizomes short; stems densely tufted, compressed, smooth, 15–25 cm tall. Leaves shorter than stems, glaucous, narrow, with involute margins, spinulose scabrous along margins, c 0.1 cm wide. Spikelets 1–2, globose-ovoid, free, 0.6 cm long; bracts erect, glume-like; glumes broadly ovate, obtuse, apiculate, 0.2–0.3 cm long, reddish-brown; stamens 3; stigmas 2. Nuts 0.11–0.13 x 0.1–0.12 cm, ellipsoid, flattened, stipitate, brownish.

*Fls. & Frts.* : August–October.

*Illus.* : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 789. 1982.

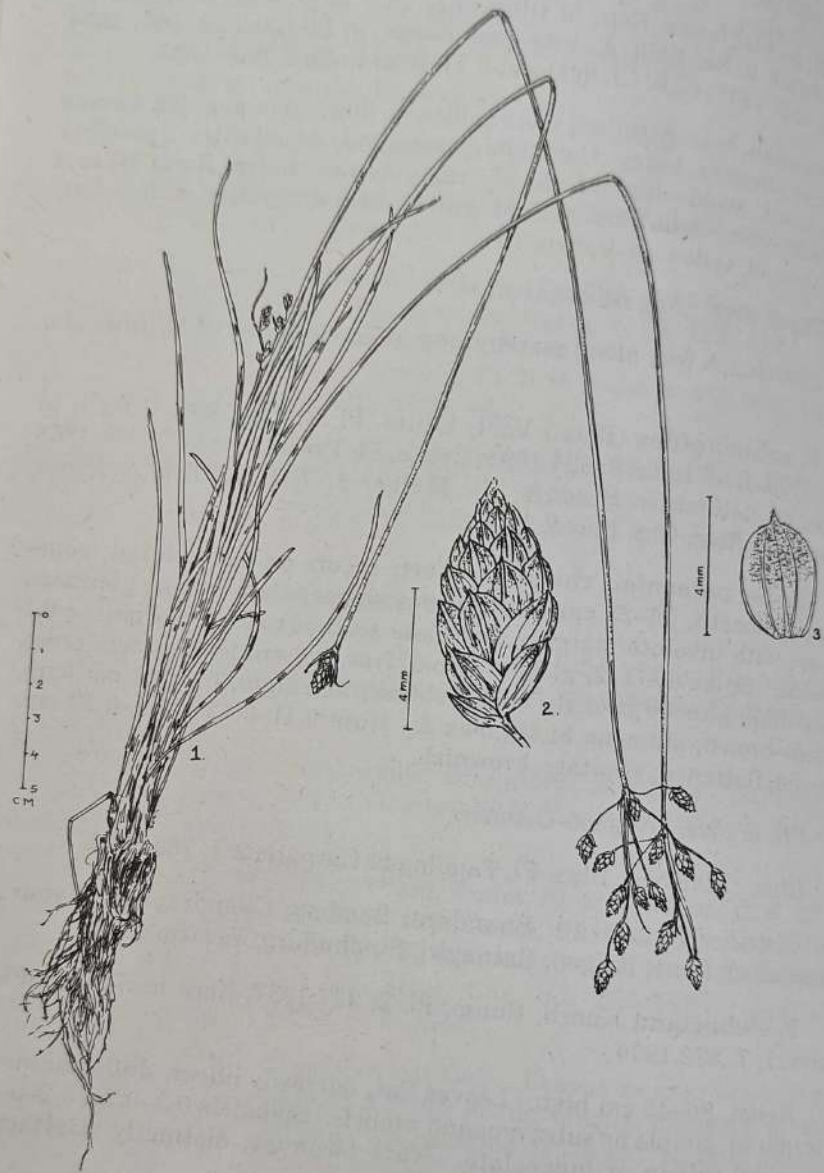
*Distrib.* : Amaravati; Bhandara; Bombay; Chandrapur; Nagpur; Osmanabad; Pune; Raigad; Ratnagiri; Sindhudurg; Yavatmal.

*F. sieberiana* Kunth, Enum. Pl. 2: 237. 1837; Kern in Steenis, Fl. Males. 1, 7: 572. 1974.

Herbs, 30–45 cm high. Leaves flat, narrowly linear. Inflorescence of terminal, simple or subcompound umbels. Spikelets 0.3–0.7 x 0.2–0.4 cm, ovoid-oblong or lanceolate. Nuts biconvex, distinctly stipitate, umbonate.

*Fls. & Frts.* : September–December.

*Illus.* : Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 673. 1988; Lakshminarasimhan & Sharma, Fl. Nasik Dt. 510, f. 44. 1991.



*Fimbristylis sieberiana* Kunth  
1. Habit 2. Spikelet 3. Glume

*Distrib.* : In marshy places on banks of nallas. Amaravati; Bombay; Dhule; Nasik; Pune; Raigad; Yavatmal.

*Notes* : Cooke (1908) has not reported this species from former Bombay Presidency. It has been reported for the first time from Maharashtra by Karthikeyan and Anandkumar in *J. Bombay nat. Hist. Soc.* 80: 256.1983.

**F. tenera** Schult. in R. & S. Mant. 2: 57.1824; C.B.Cl. in Hook. f. Fl. Brit. India 6: 642.1893.

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|--|-----|----------------------|
| 1. Glumes adpressed; nuts white, smooth or subtuberculate, coarsely reticulate | ... | <i>var. tenera</i>   |
| 1. Glumes glabrate; nuts yellowish-brown, verrucose                            | ... | <i>var. oxylepis</i> |

*var. tenera.*

Herbs; stems 20–30 cm long, tufted. Leaves as long as stem, slenderly linear, 1–15 x 0.04–0.1 cm, flat. Umbels lax, subcompound with 7–9 spikelets. Spikelets solitary, c 0.6 x 0.2 cm, ellipsoid, ultimately cylindric-lanceolate. Nuts 0.06–0.08 x 0.05–0.06 cm, obovoid.

*Fls. & Frts.* : August–December.

*Illus.* : Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 674. 1988.

*Distrib.* : Ahmednagar; Akola; Amaravati; Kolhapur; Nagpur; Osmanabad; Raigad; Satara.

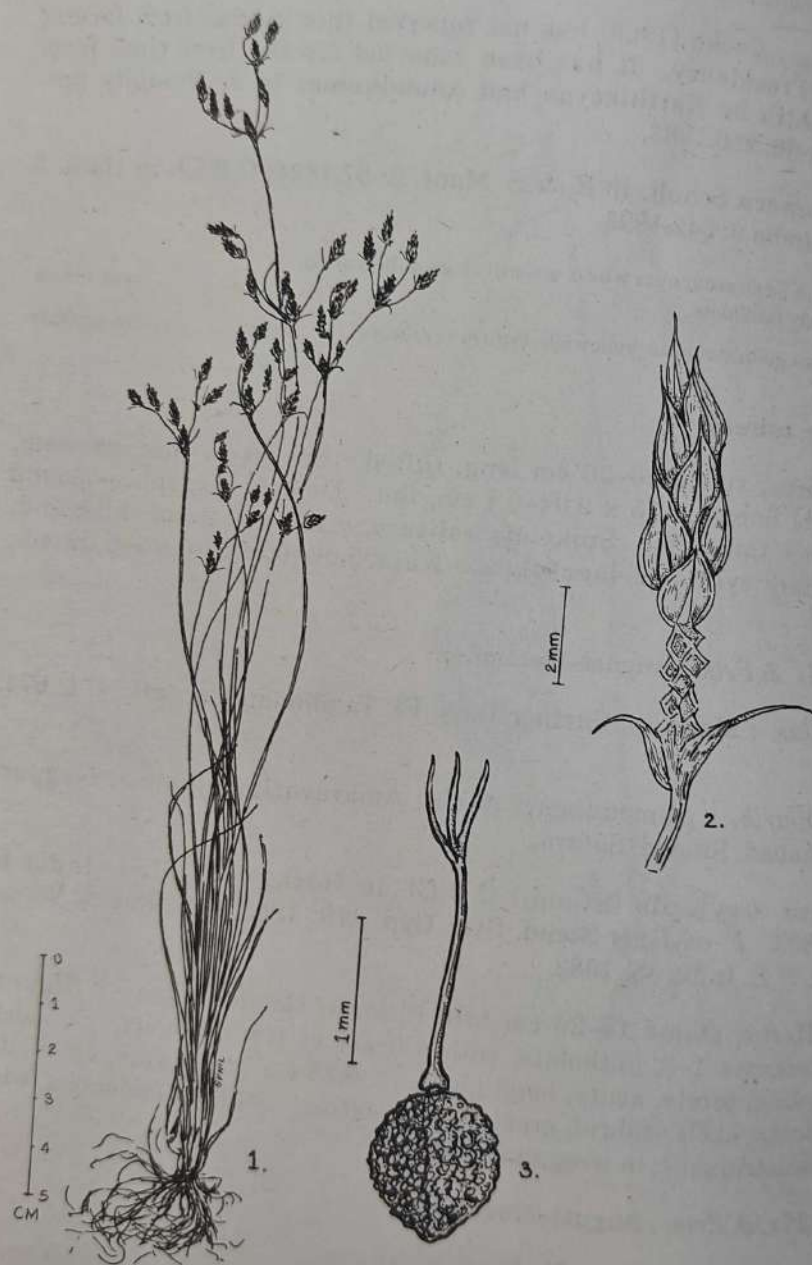
*var. oxylepis* (Steud.) C.B.Cl. in Hook. f. Fl. Brit. India 6: 642.1893. *F. oxylepis* Steud. Syn. Cyp. 110. 1855; A.S. Rao & Verma Cyper. N.E. India 35. 1982.

Herbs; stems 15–20 cm tall, filiform, slender. Leaves filiform. Inflorescence 1–2, anthelate, with solitary or few spikelets. Spikelets lanceolate, terete, acute, long; glumes c 0.25 cm long, ovate, apiculate, glandular; keels scabrid, green. Nuts obovoid, obtusely trigonous, with isodiametric cells, in irregular rows.

*Fls. & Frts.* : August–November.

*Distrib.* : Bombay; Sindhudurg; Thane.

**F. tetragona** R. Br. Prodr. 226.1810; C.B.Cl. in Hook. f. Fl. Brit. India 6: 631.1893; Cooke, Fl. Pres. Bombay 3: 393.1958 (Repr. ed.); Kern in Steenis, Fl. Males. 1, 7: 590. 1974.



*Fimbristylis tenera* Schult.  
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Herbs, perennial, glaucous, densely tufted, 20–35 cm high; rhizomes short. Leaves absent; sheaths brown. Spikelets 0.3–0.5 cm long, terminal, solitary, ovoid, brown or yellow. Nuts c 0.1 cm long, conspicuously stipitate with 10–12 longitudinal trabeculae.

*Fls. & Frts.* : August–February.

*Illus.* : C.B.Cl. Illustr. Cyper. t. 40 (1–4). 1909; A.S. Rao & Verma, Cyp. N.E. India 33, f. 13–13a. 1982; T. Koyama in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 5: 322, f. 25. 1985; Lakshminarasimhan & Sharma, Fl. Nasik Dt. 512, f. 45. 1991.

*Distrib.* : Common in all districts.

*F. tomentosa* Vahl, Enum. Pl. 2: 290.1806; Kern in Steenis, Fl. Males. 1, 7: 576, f. 45.1974. *F. podocarpa* Nees & Mey. in Wight, Contrib. Bot. Ind. 98. 1834 p.p.; C.B.Cl. in Hook. f. Fl. Brit. India 6: 638.1893. *F. diphylla* var. *pluristriata* C.B.Cl. in Hook. f. op. cit. 637. *F. dichotoma* ssp. *podocarpa* (Nees & Mey.) T. Koyama in Micronesica 1: 87.1964.

Herbs, c 35 cm tall, tufted, perennial; stems slender, stiff. Leaves half as long as stem or longer, hairy at top. Umbels simple or spikelets solitary. Bracts 3, longer than umbel. Spikelets reddish-brown; glumes shortly pointed. Nuts c 0.15 cm long, orbicular, flattened, smooth, reticulate, umbonulate.

*Fls. & Frts.* : September–October.

*Illus.* : C. B. Cl. Illustr. Cyper. t. 42(5–6). 1909 (*F. podocarpa*); Kern in Steenis, op. cit.

*Distrib.* : Nagpur; Pune; Raigad; Ratnagiri; Thane.

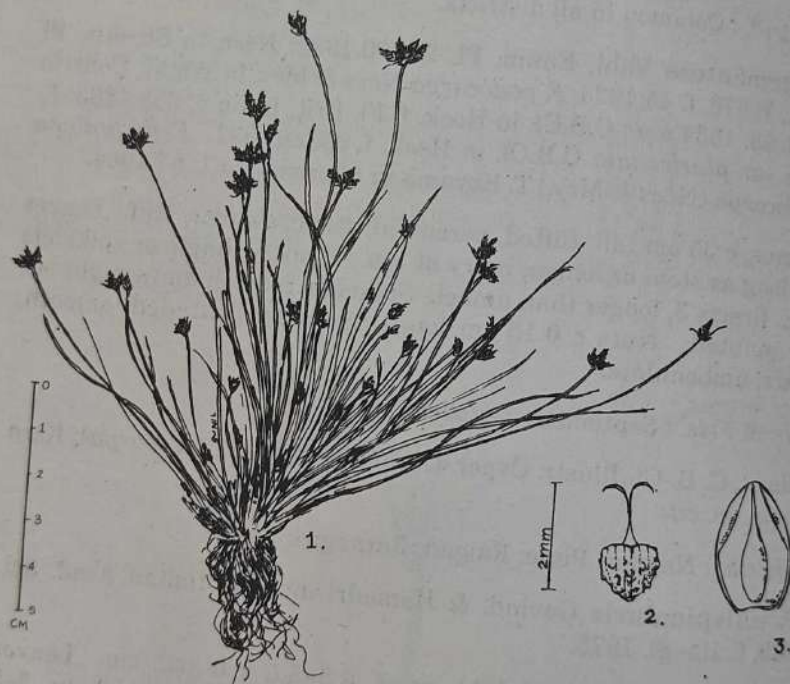
*F. unispicularis* Govind. & Hemadri in Proc. Indian Acad. Sci. 82B: 205, f. 1(a–g). 1975.

Annuals; culms fasciculate, erect, 2.5–5.0 x 0.025 cm. Leaves acute or subacute, ligulate, nearly as long as the culms, distichous, 3–5 x 0.05 cm; sheaths glabrous or sparsely ciliate, ferruginous, purple-dotted. Spikelets solitary at the end of culms, ovoid, few-flowered, castaneous brown, c 0.3 x 0.2 cm. Nuts obovoid or narrowly obovoid, biconvex, shortly stipitate, umbonulate, white or stramineous, c 0.1 x 0.1 cm.

*Fls. & Frts.* : September–October.

*Illus.* : Govind. & Hemadri, op. cit.

*Distrib.* : Rare in open grassy plateau along with *Exacum lawii*, *Fimbristylis woodrowii* etc. Pune.



*Fimbristylis woodrowii* C. B. Cl.  
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*F. woodrowii* C. B. Cl. in Kew Bull. Misc. Inf. 1898: 227. 1898 & in J. Linn. Soc. 34: 688. 1898; Cooke, Fl. Pres. Bombay 3: 398. 1958 (Repr. ed.); Hooper in Sald. & Nicols. Fl. Hassan Dt. 682. 1976.

Herbs, caespitose, low; roots fibrous. Leaves shorter than stems, setaceous. Inflorescence a subcompound umbel. Spikelets geminate, reddish-brown; rhachilla deeply pitted. Nuts narrowly obovoid, stipitate, faintly ribbed.

Fls. & Frts. : June–October.

Illus. : Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 678. 1988.

Distrib. : Ahmednagar; Bombay; Kolhapur; Nasik; Pune; Raigad; Sindhudurg; Thane.

#### FUIRENA Rottb.

1. Three inner hypogynous bristles linear or narrow, or more often absent:
  2. Nut elegantly striate; inflorescence compound corymbose ... *F. wallichiana*
  2. Nut smooth; spikelets in ordinary clusters ... *F. pubescens*
1. Three inner hypogynous bristles obovate or subquadrate, broad-headed:
  3. Perennials; petals sessile or nearly so ... *F. umbellata*
  3. Annuals; petals stalked:
    4. Nuts ovoid ... *F. trilobites*
    4. Nuts ellipsoid or obovoid:
      5. Spikelets 0.43–0.75 cm long; rhachilla slender; claw of petals as long as blade; glumes slenderly 3-nerved on back; awn c 0.1 x 0.02 cm, pilose ... *F. ciliaris*
      5. Spikelets 0.33–0.5 cm long; rhachilla obsolete; claw of petals shorter than blade; glumes bearing 3 prominent yellowish-brown costas on both sides of mid-vein, those excurrent to strong, thorn-like scabrous awn, 0.1–0.15 x 0.05 cm, squamellae ciliate ... *F. uncinata*

*Fuirena ciliaris* (L.) Roxb. Fl. Ind. 1: 184. 1820; Kern in Steenis, Fl. Males. 1, 7: 519. 1974. *Scirpus ciliaris* L. Mant. Alt. 182. 1771. *Fuirena glomerata* Lam. Illustr. 1: 150. 1791; C.B.Cl. in Hook. f. Fl. Brit. India 6: 666. 1893; Cooke, Fl. Pres. Bombay 3: 412. 1958 (Repr. ed.).

Herbs, annual. c 30 cm high. Leaves 3.7 x 0.3 cm, linear-lanceolate, Spikelets clustered, approximate, 0.2 cm long, ovoid or

oblong. Nuts c 0.1 cm long, ellipsoid or obovoid, stipitate, trigonous with acute angles, beaked.

*Fls. & Frts.* : September–February.

*Illus.* : C. B. Cl. Illustr. Cyper. t. 59(6). 1909 (*Fuirena glomerata*); Kern in Steenis, *op.cit.* 517. f. 32; T. Koyama in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 5: 153, f. 5(A–E). 1985.

*Distrib.* : Ahmednagar; Bombay; Bhandara; Chandrapur; Kolhapur; Nagpur; Nasik; Pune; Raigad; Ratnagiri; Sindhudurg; Thane.

*F. pubescens* (Lam.) Kunth, Enum. Pl. 2: 182.1837; C.B.Cl. in Hook. f. Fl. Brit. India 6: 665.1893. *Scirpus pubescens* Lam. Illustr. 1: 139. 1791.

Rhizomes creeping, short; stems 30–50 cm long, triquetrous, glabrous except at top. Leaves 5–20 x 0.6 cm, glabrous or hairy, base sheathing. Spikelets c 1 cm long, ovoid-oblong; bracts as long as spikelets; glumes lurid black or glaucescent, often somewhat regularly 5-ranked. Nuts subsessile, beak pyramidal, minutely scabrous.

*Distrib.* : Rare. Buldhana.

*F. trilobites* C. B. Cl. in Hook. f. Fl. Brit. India 6: 666.1893; S.M. & M.R. Almeida in J. Bombay nat. Hist. Soc. 84: 258. 1987.

Annuals; stems rigid, angular. Leaves densely hairy, 7-nerved. Clusters of spikelets 1–3, approximate; bristles long-clawed. Nuts ovoid, smooth, pale.

*Fls. & Frts.* : September–October.

*Illus.* : C.B.Cl. Illustr. Cyper. t. 59, f. 5. 1909; Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 790. 1982.

*Distrib.* : Rare in rice fields. Sindhudurg.

*F. umbellata* Rottb. Progr. 27.1772; C.B.Cl. in Hook. f. Fl. Brit. India 6: 666.1893; Cooke, Fl. Pres. Bombay 3: 413. 1958 (Repr. ed.); Kern in Steenis, Fl. Males. 1, 7: 518.1974.

Herbs, perennial; culms solitary or few together, 3–100 cm tall. Basal leaves reduced to sub-aphyllous sheaths, bladed leaves 5–7 to a culm; blades 10–20 x 0.5–1.5 cm, lanceolate to linear-lanceolate. Inflorescence paniculiform, with 3–12 glomerulous clusters of spikelets. Spikelets ovoid or ovoid-ellipsoid, 0.4–1.0 x 0.25–0.3 cm, brownish-green or dark brownish-green at maturity.

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*Fls. & Frts.* : June–October.

*Illus.* : C.B.Cl. Illustr. Cyper. t. 59(9).1909; A.S. Rao & Verma, Cyper. N.E. India 46, f. 29–29c.1982.

*Distrib.* : Occasional. Pune; Ratnagiri; Sindhudurg; Thane.

*F. uncinata* (Willd.) Kunth, Enum. Pl. 2: 184. 1837; C.B.Cl. in Hook. f. Fl. Brit. India 6: 666. 1893; Cooke, Fl. Pres. Bombay 3: 413.1958 (Repr.ed.). *Scirpus uncinatus* Willd. Sp. Pl. 1: 300.1798. *Fuirena capitata* (Burm. f.) T. Koyama in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 5: 151.1985.

Herbs, tufted, annual; stems 10–20 cm tall, hispid-pubescent. Leaves 3–5 x 0.5 cm, linear, sparsely hairy, apex acuminate, 3–5-nerved; sheaths hairy. Spikelets crowded, in simple or lobed clusters, ovoid, 0.3–0.5 cm long, echinate, yellowish-green, becoming brown; glumes obovate, rigid, c 0.3 cm long, pubescent, with stiff curved awn; bristles 3, retrorsely scabrid, 3 scales shortly stalked, quadrate or orbicular. Nuts obovoid, trigonous, pale brown.

*Fls. & Frts.* : January–March.

*Illus.* : T. Koyama in Dassan. & Fosb. *op.cit.* 153, f. 5(F–M); Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 679. 1988.

*Distrib.* : Scattered in open, moist situations, fields and along coasts. Ratnagiri; Sindhudurg.

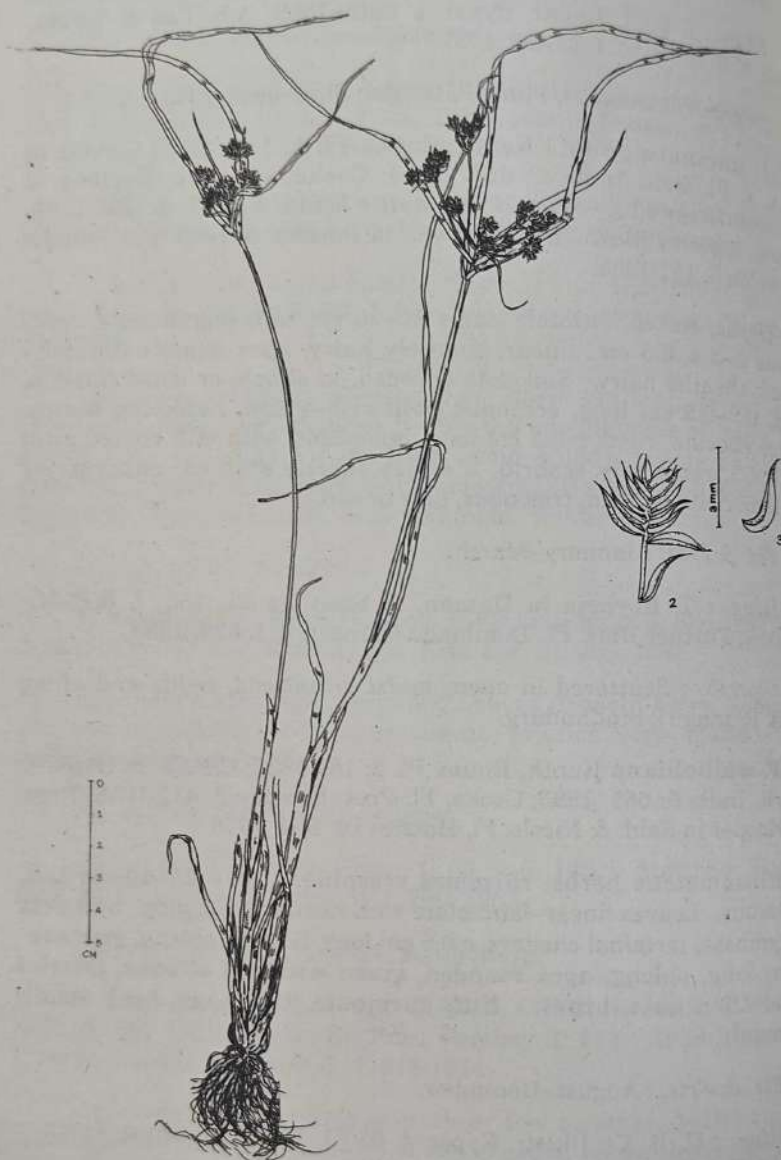
*F. wallichiana* Kunth, Enum. Pl. 2: 182.1837; C.B.Cl. in Hook. f. Fl. Brit. India 6: 665. 1893; Cooke, Fl. Pres. Bombay 3: 412.1958 (Repr.ed.); Hooper in Sald. & Nicols. Fl. Hassan Dt. 684. 1976.

Rhizomatous herbs; rhizomes creeping; stems 25–40 cm tall, triquetrous. Leaves linear-lanceolate with recurved margins. Spikelets in corymbose, terminal clusters, c 0.6 cm long, broadly oblong; glumes c 0.3 cm long, oblong, apex rounded, green with red streaks, bristles shorter than nuts, brown. Nuts turbinate, trigonous, beak small, pyramidal.

*Fls. & Frts.* : August–December.

*Illus.* : C. B. Cl. Illustr. Cyper. t. 58(8). 1909; Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 681. 1988.

*Distrib.* : Ahmednagar; Akola; Amaravati; Dhule; Kolhapur; Nagpur; Osmanabad; Pune; Raigad; Yavatmal.



*Indocourtoisia cyperoides* (Roxb.) Bennet & Raiz.  
1. Habit 2. Spikelet 3. Glume

*Indocourtoisia*  
Forester 107: 43  
*Courtoisia cyperoides*  
Hook. f. Fl. Brit.  
(Repr. ed.). Cyp.  
4, 20, 101: 501  
Taxon 31: 559.

Herbs, erect,  
0.2–0.5 cm, linear,  
greenish-yellow  
both sides.

Fls. & Fr.

Illus. :  
1991.

Distrib.  
Sindhudurg

Notes  
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*Indocourtoisia*

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INDOCOURTOISIA Bennet & Raiz.

*Indocourtoisia cyperoides* (Roxb.) Bennet & Raiz. in Indian Forester 107: 432.1981. *Kyllinga cyperoides* Roxb. Fl. Ind. 1: 187.1820. *Courtoisia cyperoides* (Roxb.) Nees in Linnaea 9: 286.1834; C.B.Cl. in Hook. f. Fl. Brit. India 6: 625.1893; Cooke, Fl. Pres. Bombay 3: 391.1958 (Repr. ed.). *Cyperus pseudokyllingioides* Kuekenh. in Engl. Pflanzenr. 4, 20, 101: 501.1936. *Pseudomariscus cyperoides* (Rottb.) Rauschert in Taxon 31: 559. 1982.

Herbs, erect c 30 cm high, tufted; roots fibrous. Leaves 5.0–32.0 x 0.2–0.5 cm, linear. Inflorescence of simple compound umbels. Spikelets greenish-yellow. Nuts c 0.2 x 0.1 cm, trigonous, fusiform, tapering at both sides.

Fls. & Frts. : September–December.

Illus. : Lakshminarasimhan & Sharma, Fl. Nasik Dt. 515, f. 47. 1991.

Distrib. : Bombay; Chandrapur; Nagpur; Nasik; Ratnagiri; Sindhudurg; Thane.

Notes : *Courtoisia* Nees (1834) is a later homonym of *Courtoisia* Marchand (1830) which belongs to Lichens, hence the new name *Indocourtoisia*.

JUNCCELLUS C. B. Cl.

- |  |     |                         |
|--|-----|-------------------------|
| 1. Inflorescence umbelled                            | ... | <i>J. alopecuroides</i> |
| 1. Spikelets in a head :                             |     |                         |
| 2. Spikelets many, densely packed in a terminal head | ... | <i>J. pygmaeus</i>      |
| 2. Spikelets 1–30 in 1, apparently lateral head      | ... | <i>J. laevigatus</i>    |

*Juncellus alopecuroides* (Rottb.) C.B.Cl. in Hook. f. Fl. Brit. India 6: 595.1893. *Cyperus alopecuroides* Rottb. Deser. Pl. Rar. Progr. 20: 1772; Cooke, Fl. Pres. Bombay 3: 373.1958 (Repr. ed.); Hooper in Sald. & Nicols. Fl. Hassan Dt. 463. 1976.

Herbs, perennial, rhizomatous. Leaves as long as or shorter than stems, leathery. Umbels compound, large. Spikelets densely crowded, ovoid; glumes ovate-elliptic, c 0.15 cm long, Nuts obovoid, pale yellow.

Fls. & Frts. : September–April.

Illus. : Ugemuge, Fl. Nagpur Dt. t. 165.1986. (*Cyperus alopecuroides*).

*Distrib.* : Bombay; Kolhapur; Nagpur; Osmanabad; Pune; Satara; Sindhudurg; Thane.

**J. laevigatus** (L.) C.B.Cl. in Hook. f. Fl. Brit. India 6: 596.1893. *Cyperus laevigatus* L. Mant. 179.1771; Cooke, Fl. Pres. Bombay 3: 373.1958 (Repr. ed.); Hooper in Sald. & Nicols. Fl. Hassan Dt. 666.1976.

Herbs, perennial, solitary or tufted, slender, rhizomatous, c 20 cm long. Leaves usually short or absent. Spikelets 1-30, solitary or clustered, 1.5-2.0 cm long, white. Nuts c 0.1 cm long, obovoid, microscopically punctate.

*Fls. & Frts.* : September-October.

*Illus.* : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 783. 1982. (*Cyperus laevigatus*).

*Distrib.* : Ahmednagar; Bombay (Cooke, *op. cit.*); Buldhana; Dhule; Nasik; Pune; Thane.

**J. pygmaeus** (Rottb.) C.B.Cl. in Hook. f. Fl. Brit. India 6: 596. 1893. *Cyperus pygmaeus* Rottb. Descr. & Ic. 20, t. 14, f. 5. 1773; Cooke, Fl. Pres. Bombay 3: 372.1958 (Repr. ed.). *C. michelianus* (L.) Link ssp. *pygmaeus* (Rottb.) Aschers. & Graebn. Syn. 2(2) : 273.1930; Hooper in Sald. & Nicols. Fl. Hassan Dt. 667.1976.

Herbs, annual; stems tufted, 5-15 cm tall. Leaves as long as or shorter than stems, canaliculate. Spikelets in densely packed, terminal heads, contorted, ovate-lanceolate, compressed, 0.3-0.5 cm long; glumes oblong-lanceolate, brown, margins broadly hyaline. Nuts oblong, trigonous or plano-convex, brown.

*Fls. & Frts.* : June-February.

*Illus.* : Kuekenth. in Engl. Pflanzenr. 4, 20, 101: 312, f. 35 F-G. 1936 (*C. michelianus* ssp. *pygmaeus*); Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 646. 1988. (*Cyperus pygmaeus*).

*Distrib.* : Ahmednagar; Akola; Amaravati; Bombay; Buldhana; Chandrapur; Dhule; Kolhapur; Nagpur; Pune; Raigad; Satara; Sindhudurg; Thane; Yavatmal.

#### KYLLINGA Rottb. (*nom.cons.*)

- |   |                          |
|---|--------------------------|
| 1. Nut-bearing glumes winged in upper half of keel :                                    |                          |
| 2. Flowering glumes submucronate; keel with a lunate crested glandular wing             | ... <i>K. nemoralis</i>  |
| 2. Flowering glumes scarcely acute; keel winged by a broad hyaline incise-toothed crest | ... <i>K. squamulata</i> |

1. Nut-bearing glumes not winged in the upper half of its keel:
  2. Rhizomes short, tufted; head normally lobed with 3-4 spikes, though a few stems may bear a single spike ... *K. tenuifolia*
  3. Rhizomes long, creeping; head normally a single spike, though a few stems may have small lateral spikes:
    4. Rhizomes slender, aerial stems distant from one another, produced at every other node; glumes whitish ... *K. brevifolia*
    4. Rhizomes compact, aerial stems contiguous, produced at every node; glumes golden-red with reddish veins ... *K. melanosperma*

*Kyllinga brevifolia* Rottb. Descr. & Ic. 13, t.4, f. 3. 1773; C.B.Cl. in Hook. f. Fl. Brit. India 6: 588. 1893; Hooper in Sald. & Nicols. Fl. Hassan Dt. 686.1976; Getliffe in J.S. Afr. Bot. 49: 287.1983. *Cyperus brevifolius* (Rottb.) Hassk. Cat. Hort. Bogor 24. 1844; Kern in Steenis, Fl. Males. 1, 7: 656. 1974.

Herbs, perennial, 30 cm high. Leaves 12-17 cm long, sub-basal; shorter or as long as stem. Inflorescence of heads, solitary, terminal. Spikelets 0.2-0.5 x 0.1 cm, ovoid-lanceolate, compressed, greenish-brown. Nuts c 0.1 cm long, globosely ovoid, apiculate, vertically verrucose.

Fls. & Frts. : June-February.

Illus. : C. B. Cl. Illustr. Cyper. t. 1 (f.1-4).1909; Kern in Steenis, op. cit. 658, f. 70; Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 682. 1988.

Distrib. : Bombay; Kolhapur; Nagpur; Nasik; Pune; Raigad; Ratnagiri; Satara; Sindhudurg.

*K. melanosperma* Nees in Wight, Contrib. Bot. Ind. 91. 1834; C.B. Cl. in Hook. f. Fl. Brit. India 6: 588.1893; Getliffe in J.S. Afr. Bot. 49: 296. 1983.

Roots thick; rhizomes horizontal, stout, congested, covered with short red-brown, acuminate, imbricate scales; stem-bases bulbous-thickened, covered with cuspidate scales; culms 1.5-100.0 cm tall. Leaves few: lower reduced to reddish-brown, membranous sheaths, upper 2-4 sheaths shortly laminate; blades 0.3-0.4 cm broad, scabrid on margins and keels, stiff. Inflorescence a single spike, ovoid-cylindric to subglobose, 0.5-1.4 x 0.6-1.0 cm, dense, golden-green. Spikelets 3-5, c 0.5 cm long, ovoid-lanceolate. Nuts 1 (rarely 2), c 0.1 cm long, obovoid, golden, turning bright and reddish-orange, later black, slightly apiculate.

*Fls. & Frts.* : August–November.

*Illus.* : Matthew, Further *Illus. Fl. Tamilnadu Carnatic* 4: t. 683. 1988.

*Distrib.* : Nagpur.

*K. nemoralis* (J.R. & G. Forst.) Dandy ex Hutch. & Dalziel, *Fl. W. Trop. Afr.* 2, 2: 487. 1936; Getliffe in *J.S. Afr. Bot.* 49: 272. 1983. *Thryocephalon nemorale* J.R. & G. Forst. *Charact. Gen. Pl.* 129, t. 65. 1776. *Kyllinga monocephala* Rottb. *Descr. & Ic. Nov. Pl.* 13, f. 4. 1773; C. B. Cl. in Hook. f. *Fl. Brit. India* 6: 588. 1893; Cooke, *Fl. Pres. Bombay* 3: 390. 1958 (Repr. ed.). *Cyperus kyllingia* Endl. *Cat. Hort. Acad. Vindob.* 1: 94. 1842; Kern in Steenis, *Fl. Males.* 1, 7: 659. 1974.

Herbs, slender, perennial; rhizomes horizontally creeping; stems 10–15 cm tall, triquetrous. Leaves shorter than stems, flaccid or rigid, linear, 0.2–0.3 cm wide, scabrid along margins in the upper half. Heads ovoid-globose, terminal, 0.8–1.2 x 0.6–1.0 cm, usually 1–3 sessile heads at base, white; bracts 3–4, spreading. Spikelets obliquely ovoid-ellipsoid, 0.2–0.3 cm long; glumes with a broad opaque, ciliate wing and acute tip; stamens 2. Nuts biconvex, oblong-obovoid, yellowish-brown.

*Fls. & Frts.* : June–November.

*Illus.* : C. B. Cl. *Illustr. Cyper.* t. 2(1–2). 1909 (*Kyllinga monocephala*); Ugemuge, *Fl. Nagpur Dt.* t. 174. 1986; Matthew, Further *Illus. Fl. Tamilnadu Carnatic* 4: t. 684. 1988.

*Distrib.* : Ahmednagar; Bombay; Chandrapur; Kolhapur; Nagpur; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

*K. squamulata* Thonn. ex Vahl, *Enum. Pl.* 2: 381. 1806; C. B. Cl. in Hook. f. *Fl. Brit. India* 6: 589. 1893. *Cyperus metzii* (Hochst. ex Steud.) Mattf. & Kuekenh. in *Engl. Pflanzenr.* 4, 20, 101: 612. 1936.

Herbs, slender, annual stems tufted, 5–30 cm tall. Leaves longer than stems. Spikelets in solitary heads, subglobose; glumes ovate, keel excurrent and recurved. Nuts ovoid, yellowish.

*Fls. & Frts.* : August–October.

*Distrib.* : Ahmednagar; Bombay; Kolhapur; Pune; Raigad; Ratnagiri; Thane.

*K. tenuifolia* Steud. *Syn. Pl. Glum.* 2: 69. 1855; Hooper in Sald. & Nicols. *Fl. Hassan Dt.* 688. 1976. *K. triceps* Rottb. *Descr. & Ic.* 14, t. 4, f.

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6. (excl. cit. Rheede) 1773, nom. superfl.; C. B. Cl. in Hook. f. Fl. Brit. India 6: 587. 1893; Cooke, Fl. Pres. Bombay 3: 391. 1958 (Repr. ed.). *K. bulbosa* Beauv. Fl. d'Oware & Benin 1: 11, t. 8, f. 1. 1804. *Cyperus triceps* (Rottb.) Endl. Cat. Hort. Vindob. 1: 94. 1842; Kern in Steenis, Fl. Males. 1, 7: 659. 1974. 'Lavali'.

Herbs, erect, 8–20 cm high. Leaves 3–13 cm long, linear. Inflorescence of compact heads. Spikelets white or yellow. Nuts c 0.1 cm long, oblong, apiculate, yellowish-brown.

Fls. & Frts. : July–September.

Illus. : Mahesh. Illus. Fl. Delhi f. 213. 1966; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 785. 1982 (*Cyperus triceps*); Ugemuge, Fl. Nagpur Dt. t. 175. 1986.

Distrib. : Ahmednagar; Akola; Amaravati; Bhandara; Bombay; Dhule; Kolhapur; Nagpur; Nasik; Osmanabad; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane; Yavatmal.

Notes : According to Kern (op. cit.) Rottboell's specific epithet was nomenclaturally superfluous because the name *Scirpus glomeratus* L. was cited in synonymy (Art. 63) but the type of *Kyllinga triceps* is not that of *Scirpus glomeratus* as Rottboell indicated a definite type ("dominus koenigius legit").

#### KYLLINGIELLA R. Haines & Lye

**Kyllingiella microcephala** (Steud.) R. Haines & Lye in Bot. Notis. 131: 176. 1978. *Kyllinga microcephala* Steud. in Flora 25: 597. 1842. *Scirpus kyllingioides* (A. Rich.) Boeck. in Linnaea 36: 733. 1870; C. B. Cl. in Hook. f. Fl. Brit. India 6: 662. 1893; Cooke, Fl. Pres. Bombay 3: 409. 1958 (Repr. ed.).

Herbs, rhizomatous; stems 4–9 cm, solitary or tufted, trigonous and terete. Leaves 1/2–3/4 the length of stem, keeled, narrowed above and with very minutely dentate margins. Inflorescence terminal, of numerous small sessile congested white heads, 0.32–0.63 cm in diam., subtended by 3 spreading leaf-like bracts. Spikelets 8–12, spirally arranged, ovate-lanceolate, many-flowered. Nuts obovoid, minutely punctate, yellow.

Fls. & Frts. : June–August.

Distrib. : Kolhapur; Pune; Ratnagiri.

Notes : Cooke (*op.cit.*) had not seen any specimen and included it on the authority of C. B. Cl. (*op.cit.*). Kulkarni *et al.* (1980) reported it from Maharashtra (*J. Bombay nat. Hist. Soc.* 77: 79.1980).

LIPOCARPHA R. Br. (*nom. cons.*)

- |   |     |                      |
|---|-----|----------------------|
| 1. Heads purplish-brown; glumes 0.12–0.15 cm long; squamellae as long as nut; style short; nuts beaked at apex                            | ... | <i>L. sphacelata</i> |
| 1. Heads greenish or silvery; glumes 0.18–0.27 cm long; squamellae longer than nut; style as long as 1/2–2/3 nut; nuts not beaked at apex | ... | <i>L. chinensis</i>  |

**Lipocarpus chinensis** (Osb.) Kern in Blumea (Suppl.) 4: 167.1958 & in Steenis, Fl. Males. 1, 7: 521, f. 33. 1974. *Scirpus chinensis* Osb. Dagb. Ostind. Resa 220.1757. *Lipocarpus argentea* (Vahl) R. Br. ex Nees in Linnaea 9: 287.1835; C.B.Cl. in Hook. f. Fl. Brit. India 6: 667.1893.

Herbs, annual or perennial; stems 40–50 cm tall, stiff with short rhizomes. Leaves stiff, spreading, 1/3 or 1/2 as long as stem. Inflorescence terminal, capitate, 0.8–2.0 cm across. Spikelets ovoid, greyish-white; glumes concave, spatulate; perianth scales 2, exceeding nut. Nuts narrowly obovoid-oblong, apiculate.

Fls. & Frts. : September.

Illus. : C. B. Cl. Illustr. Cyper. t. 60(5–7).1909 (*Lipocarpus argentea*); Kern, *op. cit.*; A.S. Rao & Verma, Cyper. N.E. India 46, f. 30–30C. 1982; Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 685. 1988.

Distrib. : Bhandara; Chandrapur; Kolhapur; Raigad; Sindhudurg.

**L. sphacelata** (Vahl) Kunth, Enum. Pl. 2: 267. 1837; C. B. Cl. in Hook. f. Fl. Brit. India 6: 667. 1893; Kern in Reinwardtia 6: 32. 1961. *Hypaelyptum sphacelatum* Vahl, Enum. Pl. 2: 283.1806.

Herbs, perennial; culms tufted with short, woody rhizomes. Leaves crowded at base, narrow, linear, acute. Inflorescence a head of (1) – 2 to 4 (–5) spikes, dark purple-brown. Spikelets ovoid. Nuts ovoid-oblong, convex, brown.

Fls. & Frts. : September–November.

Illus. : A.S. Rao & Verma, Cyper. N.E. India 46, f. 31a–d. 1982; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 791. 1982.

Distrib. : Rare in moist, waste places. Chandrapur; Nagpur.

MARISCUS Vahl (*nom. cons.*)

1. Base of stems oblong, thickened by the turgid membranous colored sheaths : ... *M. clarkei*
2. Stolons slender ... *M. blatteri*
2. Stolons absent
1. Base of stems not oblong, thickened by much dilated leaf-sheaths (though often shortly nodose) :
3. Rhacheola finally breaking up into joints, each containing 1 nut ... *M. ferax*
3. Rhacheola of spikelet only breaking up at one node, viz., that above the two lowest empty glumes :
4. Spikelets bearing 1-2 (rarely 3) nuts :
  5. Stems slender; margins of glumes hyaline ... *M. paniceus*
  5. Stems large, stout; margins of glumes not hyaline :
    6. Spikelets spreading; nuts chestnut brown ... *M. sumatrensis*
    6. Spikelets erect; nuts light brown :
      7. Spikelets closely packed along the rhachis; nuts minutely granulate ... *M. cyperinus*
      7. Spikelets distant along the rhachis; nuts smooth ... *M. konkanensis*
4. Spikelets bearing 4 or more nuts :
  8. Plants annual; culms 4-20 cm tall; glumes with recurved awns:
    9. Spikelets few, digitate; glumes more than 0.2 cm long with membranous sides ... *M. maderaspatanus*
    9. Spikelets many, crowded in ovoid spikes; glumes less than 0.2 cm long with ridged sides ... *M. squarrosus*
  8. Plants perennial; culms more than 50 cm tall; glumes without recurved awns :
    10. Spikelets lanceolate, 0.2 cm wide, straw-colored, disposed in a spike ... *M. javanicus*
    10. Spikelets linear, 0.1 cm wide, reddish-brown, densely congested in a globose head ... *M. compactus*

*Mariscus blatteri* McC. in J. Bombay nat. Hist. Soc. 37: 532.1934.

Herbs, c 70 cm high, tufted. Leaves equalling or longer than stems, linear, acuminate, scabrous on upper surface. Bracts leafy, c 34

cm long. Spikes c 2.4 cm long; spikelets angular, c 9 mm long, rhachilla winged; glumes ovate-lanceolate, 7-9-nerved. Nuts oblong, c 3.5 x 1.3 mm.

*Fls. & Frts.* : October.

*Distrib.* : Rare. Satara.

**M. clarkei** (T. Cooke) T. Koyama in J. Jap. Bot. 51: 313. 1976 & Gard. Bull. Singapore 30: 158. 1977. *Cyperus clarkei* T. Cooke, Fl. Pres. Bombay 2: 873. 1908 [3: 387. 1958 (Repr. ed.)]. *Mariscus bulbosus* C. B. Cl. in Hook. f. Fl. Brit. India 6: 620. 1893 *non* Steud. 1855; Sedgw. in J. Bombay nat. Hist. Soc. 25: 698. 1918.

Small sedges. Rootstocks tuberous, clothed with oblong-lanceolate, striate pale-brown scales. Leaves linear, acute, lower sheaths much inflated. Spikelets many, arranged at the apex of the culms, closely packed. Nuts ellipsoid, trigonous, brown.

*Fls. & Frts.* : August–October.

*Illus.* : Matthew, *Illus. Fl. Tamilnadu Carnatic* 2: t. 792. 1982; T. Koyama in Dassan. & Fosb. *Rev. Handb. Fl. Ceylon* 5: 238, f. 16. 1985.

*Distrib.* : Nagpur; Raigad.

**M. compactus** (Retz.) Boldingh, Zakfl. Landb. Java 77:1916; T. Koyama in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 228, f. 15:1985. *Cyperus compactus* Retz. Obs. Bot. 5: 10:1789. *C. dilutus* Vahl, Enum. Pl. 2: 357. 1806; Cooke, Fl. Pres. Bombay 3: 389. 1958 (Repr. ed.); Kern in Steenis, Fl. Males. 1, 7: 638:1974. *Mariscus microcephalus* K.B. Presl, Rel. Haenk. 1: 182. 1830; C. B. Cl. in Hook. f. Fl. Brit. India 6: 624. 1893.

Herbs, rhizomatous, perennial; stems terete or obtusely trigonous, smooth 20–30 cm tall. Leaves equal to or longer than stems, 0.5–0.8 cm wide, rigid, strongly channelled, glaucous, scabrous margins in the upper half. Umbels compound or decompound, rays spreading, bracts reflexed; spikes globose, 1–2 cm across; spikelets linear-lanceolate, subterete, 0.5–1.2 cm long; glumes convolute, oblong-lanceolate, keel 3-nerved, green, reddish-brown; stamens and stigmas 3 each. Nuts oblong-linear, trigonous.

*Fls. & Frts.* : October–November.

*Illus.* : T. Koyama in Dassan. & Fosb. *op. cit.* ; Matthew, Further  
*Illus.* Fl. Tamilnadu Carnatic 4: t. 686. 1988.

*Distrib.* : Bombay; Chandrapur; Ratnagiri; Sindhudurg; Thane.

*M. cyperinus* (R.  
Hook. f. Fl. Brit. India  
Handb. Fl. Ceylon 5: 23  
1791. *Cyperus cyperin*  
154, t. 6, f. 10. 1898; K  
perennials; rhiz  
few

Perennials; rhizomes solitary or few culms solitary or few smooth. Leaves long-attenuate, 0.3 contracted and heads oblong-ovoid, greenish 0.1-0.13 cm, linear 0.06-0.09 cm, oblong

Fls. & Frts. : A

1988.  
Illus. : Matth

Distrib. : Bon

*M. ferax* (L.  
1893. *Cyperus fe*  
*C. odoratus* L. S  
(Repr. ed.); Kern

Herbs, annual. Leaves compound, 5-11 ovoid; glumes dense or narrowly ovoid.

Fls. &amp; Fr

Distrib. :

*M. java*  
1945; T. Koy  
*javanicus* Ho  
Steenis, Fl. M  
Cooke, Fl. F  
Gaud. in Fr  
623. 1893.

Herbs  
obtusely tri-  
0.5-1.0 cm

*M. cyperinus* (Retz.) Vahl, Enum. Pl. 2: 377.1806; C.B.Cl. in Hook. f. Fl. Brit. India 6: 621. 1893; T. Koyama in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 5: 233. 1985. *Kyllinga cyperina* Retz. Obs. Bot. 6: 21. 1791. *Cyperus cyperinus* (Retz.) Valck. Sur. Gesl. Cyperac. Mal. Arch. 154, t. 6, f. 10. 1898; Kern in Steenis, Fl. Males. 1, 7: 641. 1974.

Perennials; rhizomes short, woody, clothed with brown fibres; culms solitary or few together, erect, 10–50 x 0.1–0.3 cm, triquetrous, smooth. Leaves several, shorter than culms, narrowly linear, long-attenuate, 0.3–0.7 cm wide. Inflorescence simple, usually contracted and head-like. Spikes 1–3 x 0.8–1.2 cm, cylindrical or oblong-ovoid, greenish, bearing up to 80 spikelets. Spikelets 0.4–0.7 x 0.1–0.13 cm, linear-lanceolate or linear-oblong. Nuts 0.2–0.25 x 0.06–0.09 cm, oblong to narrowly ellipsoid, trigonous.

Fls. & Frts. : August–October.

Illus. : Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 687. 1988.

Distrib. : Bombay; Satara; Sindhudurg.

*M. ferax* (L.C. Rich.) C.B.Cl. in Hook. f. Fl. Brit. India 6: 624. 1893. *Cyperus ferax* L.C. Rich. in Act. Soc. Hist. Nat. Paris 1: 106. 1792. *C. odoratus* L. Sp. Pl. 46. 1753; Cooke, Fl. Pres. Bombay 3: 372. 1958 (Repr. ed.); Kern in Steenis, Fl. Males. 1, 7: 645. 1974.

Herbs, annual; stems 20–50 cm tall, stout, triquetrous in the upper part. Leaves linear, c 1.2 cm broad, subcoriaceous. Inflorescence compound, 5–15 cm across; primary rays obliquely patent. Spikes ovoid; glumes distant, broadly ovate; stamens 3. Nuts oblong, trigonous or narrowly ovoid, brown to black.

Fls. & Frts. : September–January.

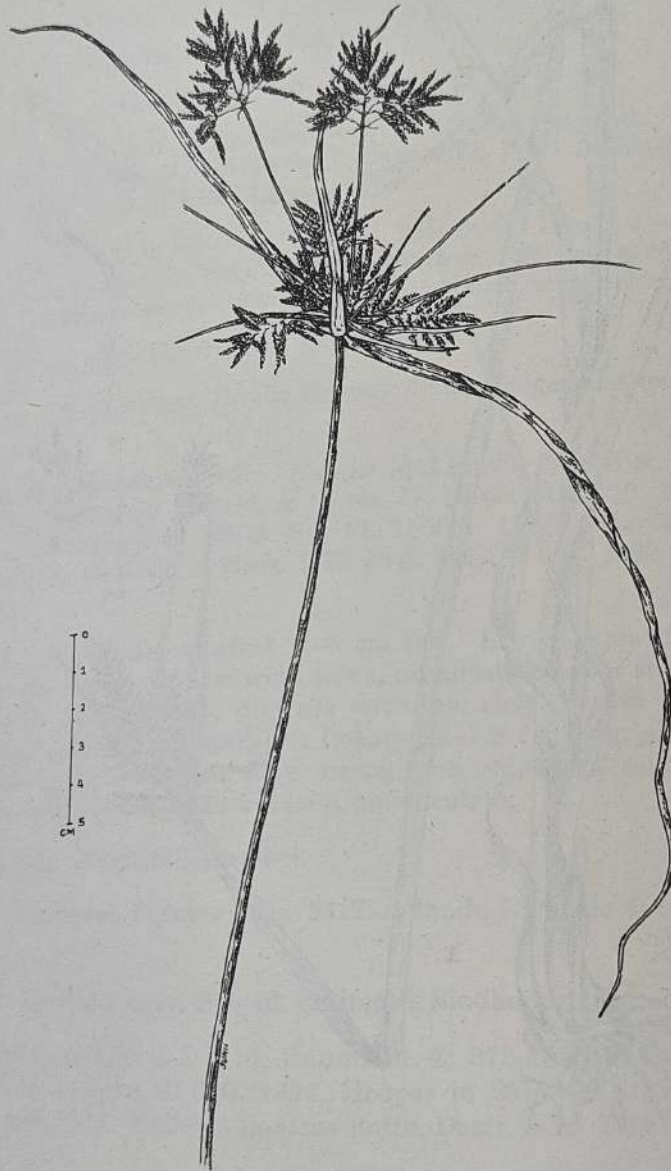
Distrib. : Satara; Sindhudurg; Thane.

*M. javanicus* (Houtt.) Merr. & Metc. in Lingnan Sci. J. 21: 4. 1945; T. Koyama in Gard. Bull. Singapore 30: 153. 1977. *Cyperus javanicus* Houtt. Nat. Hist. 2, 13; Aanw. Pl. 1, 7: t. 88, f. 1. 1782; Kern in Steenis, Fl. Males. 1, 7: 635. 1974. *C. pennatus* Lam. Illustr. 1: 144. 1791; Cooke, Fl. Pres. Bombay 3: 389. 1958 (Repr. ed.). *Mariscus albescens* Gaud. in Freyc. Voy. Bot. 415. 1826; C.B.Cl. in Hook. f. Fl. Brit. India 6: 623. 1893.

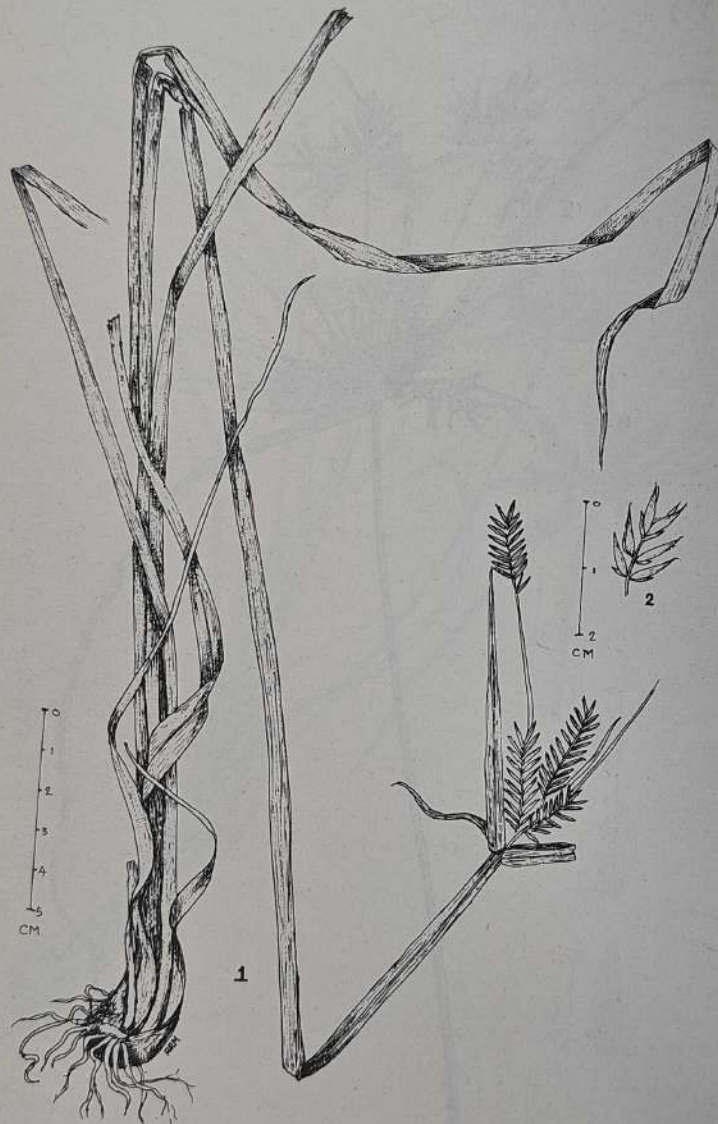
Herbs, perennial; rhizomes short; stems tufted, 25–30 cm tall, obtusely trigonous, papillose. Leaves longer than stems, coriaceous, 0.5–1.0 cm wide, apex acuminate, scabrous on keels and along margins.



*Mariscus cyperinus* (Retz.) Vahl  
1. Habit 2. Umbel 3. Nut 4. Spikelet



*Mariscus ferax* (L.C. Rich.) C.B.Cl.



*Mariscus konkanensis* (T. Cooke) Sedgw.  
1. Habit 2. Spikelet

Umbels compound  
glumes ovate, br  
stigmas 3 each. N

Fls. & Frts. :

Illus. : Kern

Distrib. : Pu

*M. konkan*  
25: 698.1918. (C  
874.1908 [3: 387

Herbs up to  
long. Peduncles  
long, green, turr

Fls. & Frts

Distrib. :  
Satara; Thane.

*M. mader*  
28, 124: 10.197  
*Cyperus mader*  
*squarrosus* sen  
non L. 1753.

Herbs, a  
longer than st  
membranous.  
exceeding ray  
narrowly oblo  
keeled, apex e

Fls. & Fr

Illus. : M  
1988.

Distrib.

*M. pan*  
Hook. f. Fl.  
Hassan Dt. 6  
1773.

1. Plants sma  
long; bract

Umbels compound, bracts 3-6, widely spreading; spikelets oblong; glumes ovate, brown to purplish, obtuse, 5-9-nerved; stamens and stigmas 3 each. Nuts ellipsoid, trigonous.

Fls. & Frts. : April-May.

Illus. : Kern in Steenis, *op. cit.* 636, f. 63.

Distrib. : Pune; Raigad; Ratnagiri; Sindhudurg.

*M. konkanensis* (T. Cooke) Sedgw. in J. Bombay nat. Hist. Soc. 25: 698. 1918. *Cyperus konkanensis* T. Cooke, Fl. Pres. Bombay 2: 874. 1908 [ 3: 387. 1958 (Repr. ed.) ].

Herbs up to 1.25 m high, erect, tufted, perennial. Leaves c 4 cm long. Peduncles unequal in length, up to 10 cm long. Spikelets c 0.8 cm long, green, turning straw-coloured. Nuts c 0.3 cm long, triquetrous.

Fls. & Frts. : July-November.

Distrib. : Ahmednagar; Dhule; Nagpur; Pune; Raigad; Ratnagiri; Satara; Thane.

*M. maderaspatanus* (Willd.) Napper in J.E. Afr. Nat. Hist. Soc. 28, 124: 10. 1971; Hooper in Sald. & Nicols. Fl. Hassan Dt. 690. 1976. *Cyperus maderaspatanus* Willd. Sp. Pl. 1: 278. 1798. *Mariscus squarrosus* sensu C. B. Cl. in Hook. f. Fl. Brit. India 6: 623. 1893 *p.p.* non L. 1753.

Herbs, annual; stems tufted, 4-6 cm tall. Leaves equal to or longer than stems, few, c 0.1 cm wide, weak, canaliculate; lower sheaths membranous. Inflorescence digitate with few rays, bracts much exceeding rays, spreading; spikelets linear, 0.6-1.8 cm long; glumes narrowly oblong, 0.15-0.20 cm long, strongly nerved, straw coloured, keeled, apex erecto-patent. Nuts oblong, puncticulate.

Fls. & Frts. : August-September.

Illus. : Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 689. 1988.

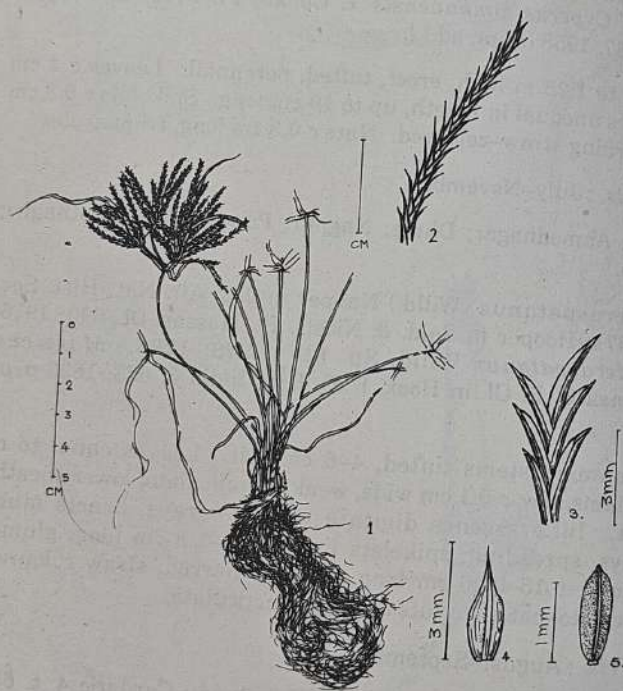
Distrib. : Ahmednagar; Raigad; Ratnagiri; Sindhudurg.

*M. paniceus* (Rottb.) Vahl, Enum. Pl. 2: 378. 1806; C.B.Cl. in Hook. f. Fl. Brit. India 6: 620. 1893; Hooper in Sald. & Nicols. Fl. Hassan Dt. 690. 1976. *Kyllinga panicea* Rottb. Descr. & Ic. 15, t. 4, f. 1. 1773.

1. Plants small, stems 10-30 cm long; rays of umbel 0-3.7 cm long; bracts often 4; spikelets small, c 0.33 cm long

...

var. *paniceus*



*Mariscus maderaspatanus* (Willd.) Napper  
1. Habit 2. Spikelet 3. Spikelet enlarged 4. Glume 5. Nut

FLC

1. Plants larger, stems up to 1 m long; bracts 5-7; spikelet  
var. *paniceus*.

Perennials, stoloniferous, culms simple, umbelliferous. Nuts oblong-lanceolate.

Fls. & Frts. : Aug

Illus. : C. B. Cl.

Illus. Fl. Tamilnadu C

Distrib. : Akola; Satara; Sindhudurg;

var. *roxburghii*  
1893; Cooke, Fl. Pres.  
*Cyperus paniceus*  
Kuekenh. in Engl. F

Herbs, perennials, culms reaching c 2 m.  
Nuts c 0.3 cm long, oblong-lanceolate, trigonous, pale.

Fls. & Frts. : Aug

Distrib. : Pune

*M. squarrosus*  
1893; Hooper in S  
*squarrosus* L. in T  
Pl. Rar. Progr. 22.  
Bombay 3: 380.1  
Wang in Fl. Rep. 1

Herbs, c 1 m high.  
Inflorescence umbelliferous, oblong-linear, glumes obovoid, trigonous.

Fls. & Frts.

Illus. : C. B. Cl.

Illus. Fl. Tamilnadu

Distrib. : Nasik; Osmanabad; Thane; Yavatmal.

1. Plants larger, stems up to 60 cm long; rays of umbel up to 5 cm long; bracts 5-7; spikelets larger, c 0.5 cm long

...var. *roxburghianus*

var. *paniceus*.

Perennials, stoloniferous. Leaves sub-basal, coriaceous. Inflorescence of simple, umbellate spikes. Spikelets lanceolate or ovoid-lanceolate. Nuts oblong, slightly curved.

Fls. & Frts. : August–November.

Illus. : C. B. Cl. Illustr. Cyper. t. 22(1–2). 1909; Matthew, Further

Illus. Fl. Tamilnadu Carnatic 4: t. 690. 1988.

Distrib. : Akola; Kolhapur; Nagpur; Nasik; Pune; Ratnagiri; Satara; Sindhudurg; Thane; Yavatmal.

var. *roxburghianus* C.B.Cl. in Hook. f. Fl. Brit. India 6: 621. 1893; Cooke, Fl. Pres. Bombay 3: 388. 1958 (under *Cyperus*) (Repr. ed.). *Cyperus paniceus* (Rottb.) Boeck. var. *roxburghianus* (C. B. Cl.) Kuekenh. in Engl. Pflanzenr. 4, 20, 101: 526. 1936.

Herbs, perennial. Leaves long, narrow, 1-nerved. Umbels simple; spikes reaching c 2.5 x 0.6 cm, cylindric. Spikelets 0.4–0.5 cm long. Nuts c 0.3 cm long, slightly curved, oblong-ellipsoid, attenuated at each end, trigonous, pale brown.

Fls. & Frts. : August–October.

Distrib. : Pune; Ratnagiri.

**M. squarrosus** (L.) C. B. Cl. in Hook. f. Fl. Brit. India 6: 623. 1893; Hooper in Sald. & Nicols. Fl. Hassan Dt. 690. 1976. *Cyperus squarrosus* L. in Torner, Cent. Pl. 2: 6. 1756. *C. aristatus* Rottb. Descr. Pl. Rar. Progr. 22. 1772; C.B.Cl. in Hook. f. op. cit. 606; Cooke, Fl. Pres. Bombay 3: 380. 1958 (Repr. ed.). *Mariscus aristatus* (Rottb.) Tang & Wang in Fl. Rep. Pop. Sin. 11: 178, t. 59, ff. 12–13. 1961.

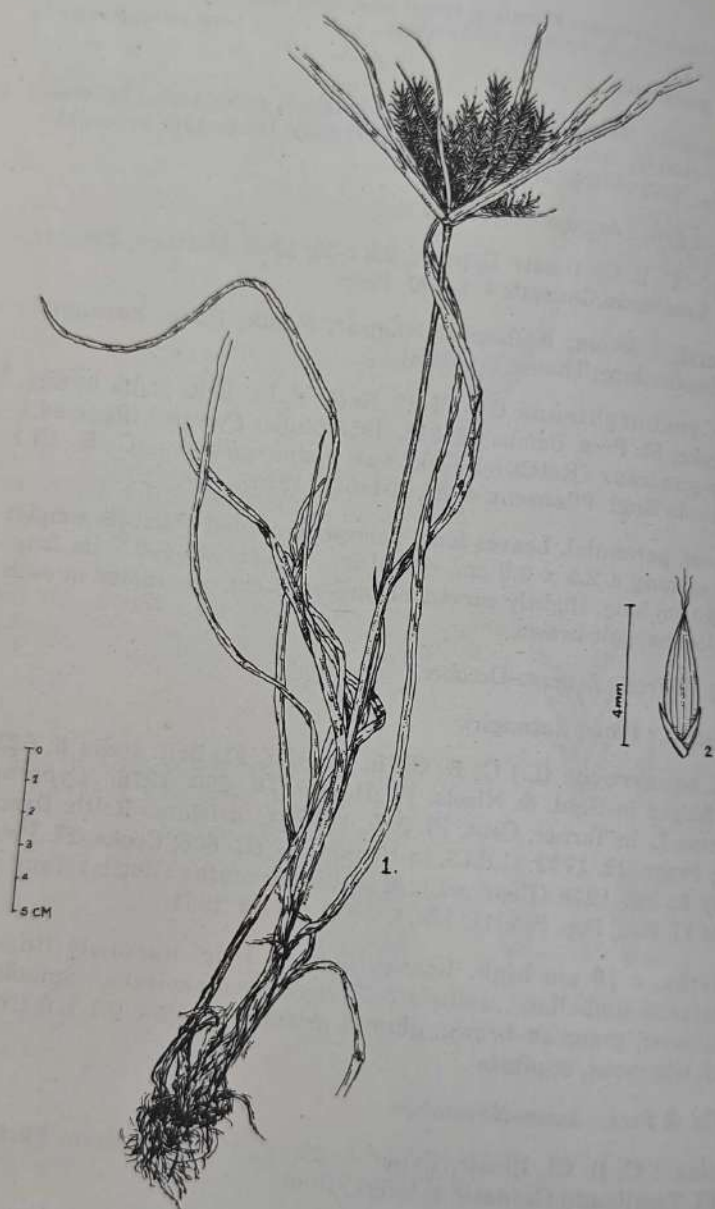
Herbs, c 10 cm high. Leaves 5–8 cm long, narrowly linear. Inflorescence umbellate, umbels 2–5, rays often capitate. Spikelets oblong-linear, greenish-brown; glumes aristate. Nuts c 0.1 x 0.1 cm, obovoid, trigonous, stipitate.

Fls. & Frts. : June–November.

Illus. : C. B. Cl. Illustr. Cyper. t. 29(5) . 1909; Matthew, Further

Illus. Fl. Tamilnadu Carnatic 4: t. 691. 1988.

Distrib. : Akola; Amaravati; Bombay; Dhule; Kolhapur; Nagpur; Nasik; Osmanabad; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane; Yavatmal.



*Mariscus paniceus* (Rotth.) Vahl var. *paniceus*.  
1. Habit 2. Spikelet

*M. sum*  
*Kyllinga sum*  
Nicols. Fl. Ha  
Cl. in Hook.  
Ktze. Rev. Ge  
1974.

1. Spikes solit  
1. Spikes ofte

var. su

Herbs,  
long, linear  
c 0.2 x 0.1  
apiculate, t

Fls. &

Illus  
sieberian  
(Cyperus)

Dist  
Chandrap  
Satara; T

var.  
Enum. I  
in Hook  
subcomp  
1936.

FL

Di

1. Glu  
2.  
2.

*M. sumatrensis* (Retz.) J. Raynal in Adansonia 15: 110.1975.  
*Kyllinga sumatrensis* Retz. Obs. Bot. 4: 13.1786; Hooper in Sald. &  
 Nicols. Fl. Hassan Dt. 690. 1976. *Mariscus sieberianus* Nees ex C. B.  
 Cl. in Hook. f. Fl. Brit. India 6: 622.1893. *Cyperus cyperoides* (L.) O.  
 Ktze. Rev. Gen. Pl. 3: 333. 1898; Kern in Steenis, Fl. Males. 1, 7: 642.  
 1974.

1. Spikes solitary
1. Spikes often digitate

... var. *sumatrensis*

... var. *subcompositus*

var. *sumatrensis*. 'Dokri'.

Herbs, perennial, 20-45 cm high, rhizomatous. Leaves 11-30 cm  
 long, linear. Inflorescence of terminal, compound umbels. Spikelets  
 c 0.2 x 0.1 cm, linear-lanceolate, green. Nuts c 0.1 x 0.1 cm, oblong,  
 apiculate, trigonous, green.

Fls. & Frts. : July-January.

Illus. : C. B. Cl. Illustr. Cyper. t. 23(5-6). 1909 (*Mariscus  
 sieberianus*); A.S. Rao & Verma, Cyper. N.E. India 24, f. 7-7b.1982  
 (*Cyperus cyperoides*).

Distrib. : Ahmednagar; Akola; Amaravati; Bhandara; Bombay;  
 Chandrapur; Dhule; Kolhapur; Nagpur; Nasik; Pune; Raigad; Ratnagiri;  
 Satara; Thane.

var. *subcompositus* (C. B. Cl.) Karthik. in Karthik. et al. Fl. Ind.  
 Enum. Monocot. 64. 1989. *M. sieberianus* var. *subcomposita* C. B. Cl.  
 in Hook. f. Fl. Brit. India 6: 622. 1893. *Cyperus cyperoides* var.  
*subcompositus* (C. B. Cl.) Kuekenh. in Engl. Pflanzenr. 4, 20, 101: 516.  
 1936.

Fls. : November.

Distrib. : Rare. Dhule; Satara.

#### PYCREUS P. Beauv.

1. Glumes with conspicuous, white, hyaline margins :
  2. Nuts globose ovoid ... *P. malabaricus*
  2. Nuts obovoid or oblanceolate:
    3. Stamens 3; nuts obovoid ... *P. macrostachyos*
    3. Samens 2; nuts oblanceolate :
      4. Cylindrical rhachis absent; stamens long with  
 flattened filaments ... *P. lanceolotii*

4. Cylindrical rhachis present; stamens short with slender filaments ... *P. bolei*
1. Glumes not as above: ...
5. Outer superficial cells of nut longitudinally oblong: ...
6. Glumes mucronulate ... *P. stramineus*
6. Glumes muticous: ...
7. Umbels solitary, sessile or subsessile; spikelets stouter, 0.3–0.4 cm wide; mature nuts without white zonations ... *P. diaphanus*
7. Umbels 2–3, of which one is sessile and rest peduncled; spikelets c 0.25 cm wide; mature nuts with white zonations ... *P. flavescens*
5. Outer cells of the nut all subquadrate, hexagonal: ...
8. Mid-nerve of the glumes excurrent into a distinct, usually more or less recurved mucro ... *P. pumilus*
8. Glumes muticous or at most with a very short, indistinct subula: ...
9. Stems decumbent at base, rooting at nodes, leafy in the lower 1/3–1/2; glumes with arcuate keel, usually with a depression on either side; nuts obovate to almost orbicular ... *P. sanguinolentus*
9. Stems erect, leafy only at the base; glumes with straight keel, without depressions; nuts oblong or oblong-obovate: ...
10. Nut with a median, longitudinal, shallow depression on either side; stamen 1 ... *P. sulcinus*
10. Nut with flat or slightly convex sides; stamens usually 2, rarely 1: ...
11. Leaves flat; glumes acute; rhachilla narrowly winged; spikelets gradually tapering to acute apex; nuts narrowly oblong, subtruncate at apex, minutely apiculate ... *P. polystachyos*
11. Leaves canaliculate, often almost filiform; glumes obtuse; rhachilla straight, wingless; spikelets parallel sided; nuts oblong-elliptic, evidently apiculate ... *P. flavidus*

*Pycneus bolei* S.M. Almeida in J. Bombay nat. Hist. Soc. 83 : 180, t. 1, f. 1. 1986.

Herbs, c 30 cm tall, tufted; stems striate. Leaves flat, 27–30 cm long, linear, narrowing to apex. Inflorescence of compact, sessile, stellate, linear spikes, bracteate; spikes 0.7–1.3 x 0.2–0.3 cm, linear,

sessile, straw colored, compressed, short tubercles.

Fls. & Frts. :

Illus. : S.M.

Distrib. : R. Sindhudurg.

*P. diaphanus* in J. Jap. Bot. : Schult. Mant. 2: Cooke, Fl. Pres. (Boeck.) C. B. *diaphanus* var. 653. 1974.

Herbs, tufted. Leaves flat, glabrous, scabrid in the margins, horizontally spreading, membranous, stamens 2, stamens 2, stamens 2, obovate, stipitate.

Fls. & Frts.

Illus. : *latespicatus* *latespicatus*

Distrib. : Sindhudurg.

*P. flavus* Hook. f. Fl. 1753; Sedg.

Herbs, shorter than the leaves, and few spikes, reddish-brown, laterally compressed lines.

Fls. & Frts.

sessile, straw coloured with 25-40 spikelets. Nuts oblanceolate, compressed, shortly apiculate, marked with longitudinal rows of tubercles.

Fls. & Frts. : October-November.

Illus. : S.M. Almeida, *op. cit.*

Distrib. : Rare in open paddy fields near river banks. Ratnagiri; Sindhudurg.

*P. diaphanus* (Schrad. ex Roem. & Schult.) Hooper & T. Koyama in J. Jap. Bot. 51: 316. 1976. *Cyperus diaphanus* Schrad. ex Roem. & Schult. Mant. 2: 477. 1824. *C. latespicatus* Boeck. in Flora 42: 433. 1859; Cooke, Fl. Pres. Bombay 3: 368. 1958 (Repr. ed.). *Pycnus latespicatus* (Boeck.) C. B. Cl. in Hook. f. Fl. Brit. India 6: 590. 1893. *Cyperus diaphanus* var. *latespicatus* (Boeck.) Kern in Steenis, Fl. Males. 1, 7: 653. 1974.

Herbs, tufted, annual; stems 15-20 cm tall, smooth, trigonous. Leaves flat, gradually narrowed upwards, 0.1-0.2 cm wide, margins scabrid in the upper part. Simple umbels of 2-3 rays; spikelets horizontally spreading, oblong, 1-2 cm long; glumes reddish-brown, membranous, ovate, obliquely patently, keeled, obtuse, sides nerveless; stamens 2, stigmas 2. Nuts laterally compressed, obovate or broadly obovate, stipitate.

Fls. & Frts. : August-November.

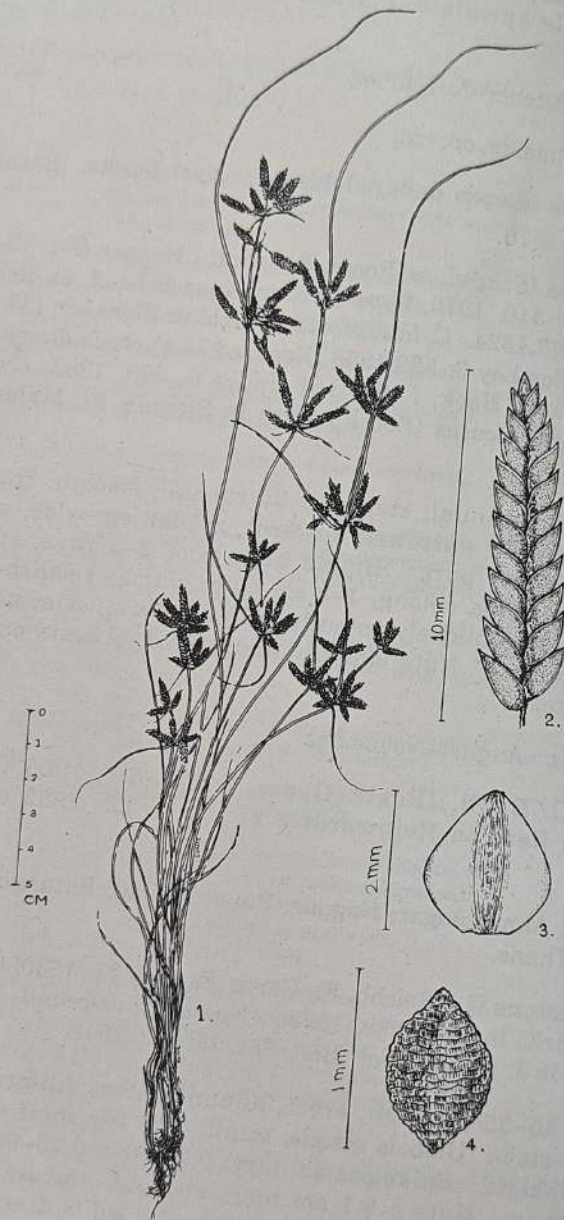
Illus. : C. B. Cl. Illustr. Cyper. t. 3(1-6) . 1909 (*Pycnus latespicatus*); Kern in Reinwardtia 2: 125, f. 13. 1952 (*Cyperus latespicatus*).

Distrib. : Ahmednagar; Nagpur; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

*P. flavescens* (L.) Reichb. Fl. Germ. Excurs. 72. 1830; C. B. Cl. in Hook. f. Fl. Brit. India 6: 589. 1893. *Cyperus flavescens* L. Sp. Pl. 68. 1753; Sedgw. in J. Bombay nat. Hist. Soc. 25: 687. 1918.

Herbs, 15-35 cm high, erect, annual; stems filiform. Leaves shorter than stem. Umbels simple, small, with few short slender rays and few spikelets. Spikelets solitary, 0.7-2.0 x 0.25-0.3 cm, dark reddish-brown. Nuts c 0.1 cm long, obovoid, apiculate, strongly laterally compressed, dark brownish-black with white, transverse wavy lines.

Fls. & Frts. : September-October.



*Pycneus flavescens* (L.) Reichb. f.  
1. Habit 2. Spikelet 3. Glume 4. Nut

Illus. : M  
Distrib.

**P. flav**  
*Cyperus flav*  
1, 7: 648. 19  
Cooke, Fl. P  
Reichb. Fl. C  
Hassan Dt. 6  
Hook. f. Fl. I

Herbs  
Inflorescence  
0.2-0.3 cm,

Fls. &

Illus. :

Distrib

**P. lar**  
1, f. 2. 198

Herb  
roots. Lea  
Scapes 5-  
heads, br  
oblong, co  
Nuts obla  
on the su

Fls.

Illu

Dis

**P. i**  
Hooper  
*macrost*  
Nees in  
6: 594.  
Mart. F  
(Repr. e

Ar  
than s

*Illus.* : Matthew, Further *Illus.* Fl. Tamilnadu Carnatic 4: t. 692. 1988.  
*Distrib.* : Pune; Kolhapur; Raigad; Sindhudurg; Thane.

*P. flavidus* (Retz.) T. Koyama in J. Jap. Bot. 51: 316. 1976.  
*Cyperus flavidus* Retz. Obs. Bot. 5: 13. 1789; Kern in Steenis, Fl. Males.  
 1, 7: 648. 1974. *C. globosus* All. Fl. Pedem. 49. 1789, non Forssk. 1775;  
 Cooke, Fl. Pres. Bombay 3: 370. 1958 (Repr.ed.). *Pycnus globosus* (All.)  
 Reichb. Fl. Germ. Excurs. 2: 140. 1830; Hooper in Sald. & Nicols. Fl.  
 Hassan Dt. 692. 1976. *P. capillaris* (Koen. ex Roxb.) Nees ex C. B. Cl. in  
 Hook. f. Fl. Brit. India 6: 591. 1893.

Herbs, annual, erect. Leaves shorter than heads, slender.  
 Inflorescence of simple umbels of contracted heads. Spikelets 0.6–1.8 x  
 0.2–0.3 cm, red or brown. Nuts c 0.1 cm long, minutely tubercled.

*Fls. & Frts.* : July–March.

*Illus.* : Matthew, Further *Illus.* Fl. Tamilnadu Carnatic 4: t. 693. 1988.

*Distrib.* : Common in all districts.

*P. lanceolatus* S.M. Almeida in J. Bombay nat. Hist. Soc. 83: 182, t.  
 1, f. 2. 1986.

Herbs, 5–8 cm tall, tufted, annual with number of slender fibrous  
 roots. Leaves radical, linear, flat, 8–10 x 0.15–0.2 cm, tapering to apex.  
 Scapes 5–7 cm long, dull grey. Inflorescence of compact spikes forming  
 heads, bracteate; spikes radiating, dull grey, distichous. Spikelets  
 oblong, compactly arranged on rhachilla, boat-shaped, acute, keeled.  
 Nuts oblanceolate, shortly beaked, with compactly arranged tubercles  
 on the surface.

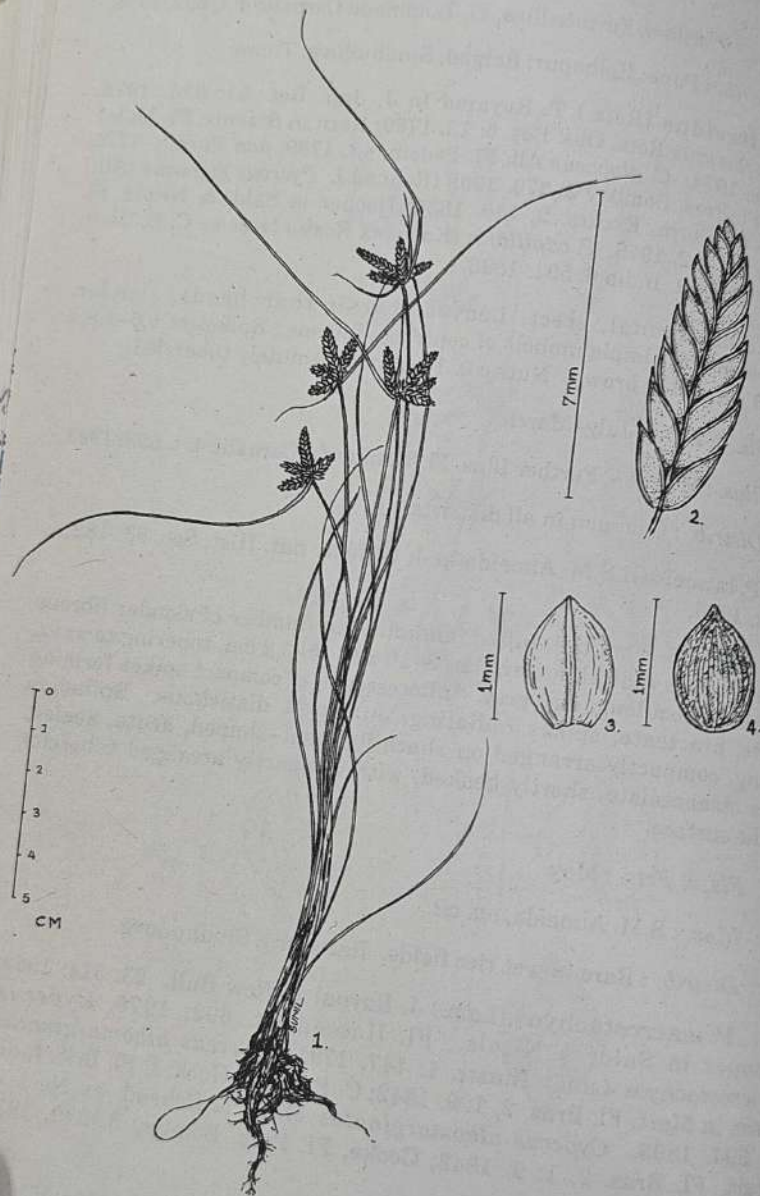
*Fls. & Frts.* : May.

*Illus.* : S.M. Almeida, *op. cit.*

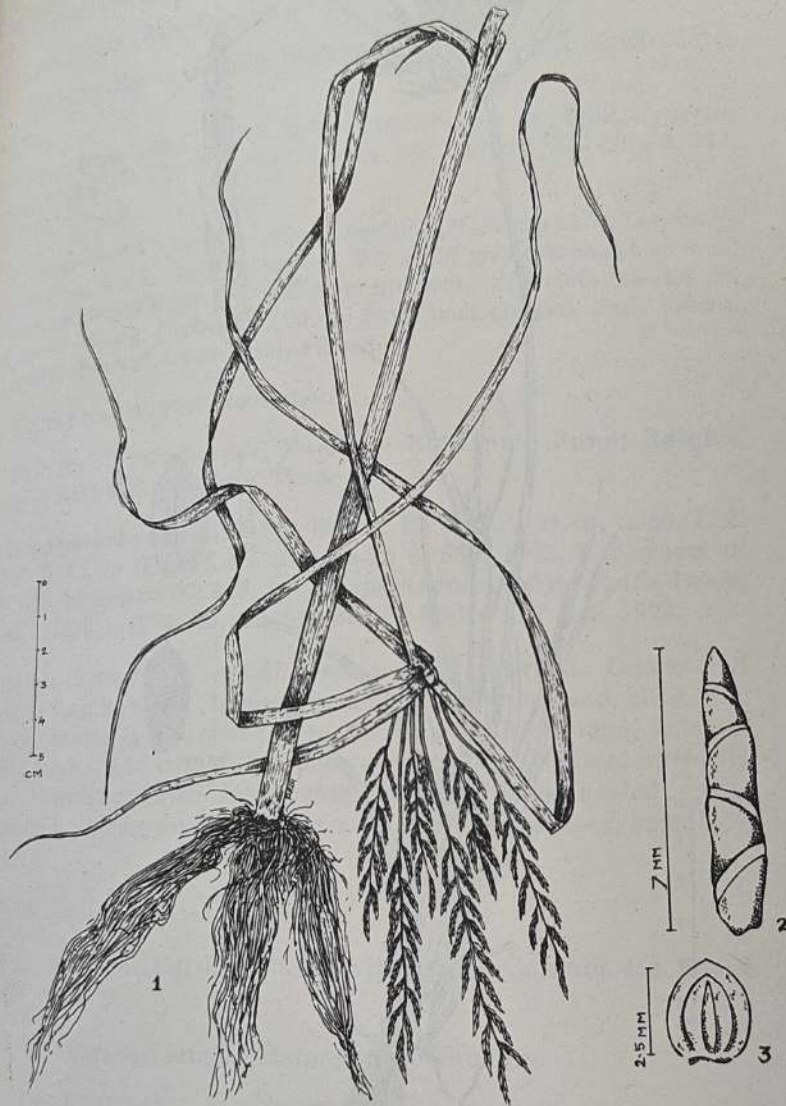
*Distrib.* : Rare in wet rice fields. Ratnagiri; Sindhudurg.

*P. macrostachyos* (Lam.) J. Raynal in Kew Bull. 23: 314. 1969;  
 Hooper in Sald. & Nicols. Fl. Hassan Dt. 692. 1976. *Cyperus*  
*macrostachyos* Lam. Illustr. 1: 147. 1791. *Pycnus albomarginatus*  
 Nees in Mart. Fl. Bras. 2, 1: 9. 1842; C. B. Cl. in Hook. f. Fl. Brit. India  
 6: 594. 1893. *Cyperus albomarginatus* Mart. & Schrad. ex Nees in  
 Mart. Fl. Bras. 2, 1: 9. 1842; Cooke, Fl. Pres. Bombay 3: 371. 1958  
 (Repr. ed.).

Annuals, 25–60 cm tall; stems solitary, robust. Leaves shorter  
 than stem; sheaths purple veined. Umbels simple or compound;



*Pycnus flavidus* (Retz.) T. Koyama  
1. Habit 2. Spikelet 3. Glume 4. Nut



*Pycnus macrostachyos* (Lam.) J. Raynal  
1. Habit 2. Spikelet 3. Glume



*Pycnus polystachyos* (Rottb.) P. Beauv.  
1. Habit 2. Spikelet 3. Glume 4. Nut

spikelets distant,  
5-7-nerved. Nuts o

Fls. & Frts. : J

Distrib. : Bon  
Thane.

*P. malabaricus*  
*malabaricus* (C. B.  
1958 (Repr. ed.) L.

Herbs, annu  
long as stem, we  
spikelets, arrang  
long, linear-oblo  
Nuts globosely o

Fls. & Frts.

Distrib. :  
Ratnagiri; Sata

*P. polystachyos*  
1807; C. B. Cl  
Gard. Bull. Sin  
& Ic. 39, t. 11,

Herbs; st  
or more as lo  
involucral br  
spikelets c 4.  
winged. Glu  
c 0.1 cm long  
stipitate.

Fls. & I

Illus. :  
695. 1988.

Distrib

*P. pumilus*  
1893; Hoo  
*pumilus* L.  
370. 1958.  
in Hook. f

spikelets distant, spreading, pale brown; glumes elliptic-oblong, 5-7-nerved. Nuts obovoid, black.  
*Fls. & Frts.* : July-December.  
*Distrib.* : Bombay; Dhule; Kolhapur; Pune; Raigad; Sindhudurg; Thane.

*P. malabaricus* C. B. Cl. in J. Linn. Soc. 34: 12. 1898. *Cyperus malabaricus* (C. B. Cl.) T. Cooke, Fl. Pres. Bombay 2: 856. 1908 [ 3: 369. 1958 (Repr. ed.) ].

Herbs, annual, slender; stems caespitose, 9-20 cm tall. Leaves as long as stem, weak. Inflorescence c 2.5 x 2.5 cm, composed of 6-12 spikelets, arranged upon 2-3 sessile branchlets. Spikelets 0.8-1.0 cm long, linear-oblong; glumes c 0.25 cm long, boat shaped, dark brown. Nuts globosely ovoid, transversely ribbed.

*Fls. & Frts.* : August-November.

*Distrib.* : Ahmednagar; Bombay; Kolhapur; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

*P. polystachyos* (Rottb.) P. Beauv. Fl. Oware 2: 48, t. 86, f. 2. 1807; C. B. Cl. in Hook. f. Fl. Brit. India 6: 592. 1893; T. Koyama in Gard. Bull. Singapore 30: 149. 1977. *Cyperus polystachyos* Rottb. Descr. & Ic. 39, t. 11, f. 1. 1773; Kern in Steenis, Fl. Males. 1, 7: 649. 1974.

Herbs; stems 10-40 cm tall, erect, triquetrous, rigid. Leaves half or more as long as stem. Inflorescence simple or compound, clustered; involucre bracts 3-5, overtopping. Spikes c 1.5 cm long, spicate; spikelets c 4.5 x 0.15 cm, 15-20-flowered, rhachilla flexuose, narrowly winged. Glumes c 0.2 cm long, ovate, oblong, strongly keeled. Nuts c 0.1 cm long, oblong, ovoid or obovoid, laterally compressed, apiculate, stipitate.

*Fls. & Frts.* : August-December.

*Illus.* : Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 694 & 695. 1988.

*Distrib.* : Bombay; Raigad; Ratnagiri; Sindhudurg.

*P. pumilus* (L.) Nees ex C. B. Cl. in Hook. f. Fl. Brit. India 6: 591. 1893; Hooper in Sald. & Nicols. Fl. Hassan Dt. 693. 1976. *Cyperus pumilus* L. in Torner, Cent. Pl. 2: 6. 1756; Cooke, Fl. Pres. Bombay 3: 370. 1958. (Repr. ed.). *C. pygmaeus* Retz. Obs. Bot. 4: 9. 1786; C. B. Cl. in Hook. f. op. cit. 619. *C. pusillus* Vahl, Enum. Pl. 2: 303. 1806; C. B.

Cl. in Hook. f. *op. cit.* *Pycneus nitens* (Retz.) Nees in Nova Acta Nat. Cur. 19, Suppl. 1: 53. 1843; C. B. Cl. in Hook. f. *op. cit.* 591.

1. Glumes oblong to lanceolate-oblong, spaced, exposing achenes between glumes; rays well developed
1. Glumes ovate, close together, not exposing achenes; rays normally poorly developed

... var. *membranaceus*

... var. *pumilus*

**var. *pumilus*.**

Herbs, annual, much tufted, 7.5–12.0 cm high. Leaves 3–7 cm long, linear, shorter than culms. Inflorescence a compact umbel of short spikes. Spikelets 0.5–0.8 x 0.1–0.2 cm, oblong-linear, greenish-brown. Nuts c 0.2 cm long, ellipsoid-oblong or subovoid, brown.

**Fls. & Frts.** : August–February.

**Illus.** : Kern in Steenis, Fl. Males. 1, 7: 651, f. 66. 1974 (*Cyperus pumilus*); Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 696. 1988.

**Distrib.** : Common in all districts.

**var. *membranaceus*** (Vahl) Karthik. in Karthik. *et al.* Fl. Ind. Enum. Monocot. 66. 1989. *Cyperus membranaceus* Vahl, Enum. Pl. 2: 330. 1806. *C. pumilus* var. *membranaceus* (Vahl) Kuekenh. in Engl. Pflanzenr. 4, 20, 101: 376. 1936. *Pycneus pumilus* ssp. *membranaceus* (Vahl) T. Koyama in Gard. Bull. Singapore 30: 151. 1977.

Herbs, annual; stems tufted. Umbels simple or reduced to a head. Spikelets loosely 4–10-flowered; glumes obovate-elliptic, c 0.06 cm broad, broadest above the middle, thinly membranous so that the subtended achene is visible, loosely disposed on rhachilla showing the rhachilla internode between the glumes.

**Distrib.** : Pune.

***P. sanguinolentus*** (Vahl) Nees ex C. B. Cl. in Hook. f. Fl. Brit. India 6: 590. 1893; T. Koyama in Gard. Bull. Singapore 30: 147. 1977. *Cyperus sanguinolentus* Vahl, Enum. Pl. 2: 351. 1806; Cooke, Fl. Pres. Bombay 3: 369. 1958 (Repr. ed.).

Herbs, perennial, tufted. Leaves c 18 cm long, linear. Inflorescence umbellate, umbels simple, 3–7-rayed, at times reduced to cluster of sessile, few-flowered spikelets. Spikelets 0.5–1.3 x 0.2–0.3 cm, greenish-purple, oblong. Nuts c 0.1 x 0.1 cm.

**Fls. & Frts.** : September–February.

**Illus.** : Matt  
(*Cyperus sanguinolentus*)

**Distrib.** : Al  
Nasik, Pune, Raig

***P. stramineus***  
Hooper in Salc  
*substramineus* B  
Steenis, Fl. Male

Tufted herb  
when folded, s  
Inflorescence a  
0.2–0.25 cm,  
yellow-brown. I  
faint wavy hori

**Fls. & Frt**

**Distrib.**  
Ratnagiri (S.M)

***P. sulcin***  
1893. *Cyperus*

Herbs, tu  
shorter than  
Spikelets 3–4  
linear-oblong

**Fls. & F**

**Distrib.**

**Queen**  
3208. 1933.  
Pres. Bomba  
655, f. 68. 1  
India 6: 591  
J. Jap. Bot.

Herbs  
base. Leav  
distant, sp  
strongly ke  
orbicular, t

*Illus.* : Matthew, *Illus. Fl. Tamilnadu Carnatic* 2: t.784. 1982  
(*Cyperus sanguinolentus*).

*Distrib.* : Ahmednagar; Bhandara; Bombay; Kolhapur; Nagpur; Nasik; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane; Yavatmal.

**P. stramineus** C. B. Cl. in Hook. f. *Fl. Brit. India* 6: 589. 1893; Hooper in Sald. & Nicols. *Fl. Hassan Dt.* 763. 1976. *Cyperus substramineus* Kuekenh. in *Engl. Pflanzenr.* 101: 398. 1936; Kern in Steenis, *Fl. Males.* 1, 7: 653. 1974.

Tufted herbs; stems up to 35 cm long. Leaves filiform, c 1 mm wide when folded, shorter than stem. Bracts 2-3, 0.3-0.5 mm apart. Inflorescence a single spike bearing solitary spikelet. Spikelets 1-2 x 0.2-0.25 cm, oblong-lanceolate, acute, 5-50-flowered; keels yellow-brown. Nuts compressed, c 1 x 0.8 mm, orbicular, maroon, with faint wavy horizontal lines.

*Fls. & Frts.* : August-October.

*Distrib.* : Common along road sides and open grassy spots. Ratnagiri (S.M. Almeida, 1983-86).

**P. sulcinux** (C. B. Cl.) C. B. Cl. in Hook. f. *Fl. Brit. India* 6: 593. 1893. *Cyperus sulcinux* C. B. Cl. in *J. Linn. Soc.* 21: 56. 1884.

Herbs, tufted; stems 10-20 cm high, slender, scaberulous. Leaves shorter than stem. Inflorescence of 3-8 spikes; bracts 3-5, leafy. Spikelets 3-8, linear-lanceolate; rhachilla narrowly winged. Nuts linear-oblong, blackish-brown.

*Fls. & Frts.* : July-December.

*Distrib.* : Satara.

#### QUEENSLANDIELLA Dom.

**Queenslandiella hyalina** (Vahl) Ballard in Hook. *Ic. Pl.* 33: t. 3208. 1933. *Cyperus hyalinus* Vahl, *Enum. Pl.* 2: 329. 1806; Cooke, *Fl. Pres. Bombay* 3: 369. 1958 (Repr. ed.); Kern in Steenis, *Fl. Males.* 1, 7: 655, f. 68. 1974. *Pycneus pumilus* sensu C. B. Cl. in Hook. f. *Fl. Brit. India* 6: 591. 1893 non Nees 1834. *Kyllinga hyalina* (Vahl) T. Koyama in *J. Jap. Bot.* 51: 317. 1976.

Herbs, small, tufted, leafy, annual; stems 40 cm long, thickened at base. Leaves flaccid. Bracts 4-6, unequal. Spikes oblong. Spikelets distant, spreading, green; rhachilla broadly winged; glumes ovate, strongly keeled, greenish to golden yellow, sides clearly nerved. Nuts orbicular, truncate, flat.

*Fls. & Frts.* : August–October.

*Illus.* : Kern in Steenis, *op. cit.*; Matthew, *Illus. Fl. Tamilnadu Carnatic 2*: t. 782. 1982 (*Cyperus hyalinus*); T. Koyama in Dassan. & Fosb. *Rev. Handb. Fl. Ceylon 5*: 243, f. 17. 1985 (*Kyllinga hyalina*).

*Distrib.* : Rare. Bombay; Nagpur; Raigad; Sindhudurg.

**RHYNCHOSPORA Vahl ('*Rynchospora*' Corr.) (*nom. cons.*)**

1. Stems leafy throughout; inflorescence paniculate, consisting of a solitary or corymbiform anthelas ... *R. corymbosa*
1. Stems leafy only at base; inflorescence capitate, consisting of a solitary terminal subglobose head : ...
2. Nuts laterally compressed with its edge towards axis of spikelet, as broad as long or narrower; bristles shorter or longer than beak or absent ... *R. rubra*
2. Nuts dorsiventrally compressed with one of its faces towards axis of spikelets, always narrower than long; bristles at least some, always longer than nut: ...
3. Bristles all scabrid in upper part only, the 3 inner ones plumose at base; beak of nut with a median groove on each side ... *R. longisetia*
3. Bristles all scabrid throughout, non-plumose; beak of nut not grooved ... *R. wightiana*

***Rhynchospora corymbosa* (L.) Britt.** in *Trans. New York Acad. Sci.* 11: 84. 1892; Verma & Chandra in *Bull. Bot. Surv. India* 22: 131, figs. 6 a–b. (1980) 1982; S.M. Almeida, *Fl. Savantwadi* 2:95. 1990. *Scirpus corymbosus* L. in Torner, *Cent. Pl.* 2: 7. 1756. *Rhynchospora aurea* Vahl, *Enum. Pl.* 2: 229. 1806; C. B. Cl. in *Hook. f. Fl. Brit. India* 6: 671. 1893; Cooke, *Fl. Pres. Bombay* 3: 416. 1958 (*Repr. ed.*).

Rhizomatous perennial, herbs, 60–150 cm high; stems stout, triquetrous. Leaves flat, up to 90 cm long with prominent midrib. Inflorescence paniculate, consisting of 2–5 distant corymbiform anthelas. Spikelets lanceolate, brown. Nuts sessile, obovate-oblong, brown, beaked; beak conical, grooved on both sides.

*Fls. & Frts.* : November–December.

*Illus.* : Verma & Chandra, *op. cit.* Matthew, *Illus. Fl. Tamilnadu Carnatic 2*: t. 794. 1982.

*Distrib.* : Rare. Sindhudurg (S.M. Almeida, *op. cit.*).

*R. longis*  
nat. Hist. Soc.  
Surv. India 22

Herbs, c  
half as long a  
tuberculated  
Nuts with lon

*Fls. & F*

*Illus.* :

*Distrib*

*R. rub*

1903; Verm  
Balakr. Fl.  
141. 1790.  
C. B. Cl. in  
3: 415. 195

Pere  
thick. Lea  
in globos  
0.4–0.5 c  
brown.

*Fls.*

*Illu*  
*wallichii*  
1974; A.

*Di*

*R.*  
in Hook  
1958 (1  
134. (19  
Car. 19

*F*  
linear  
bracts  
x 0.1

*R. longisetis* R. Br. Prodr. 230. 1810; Kapoor *et al.* in J. Bombay nat. Hist. Soc. 60: 479-480, t. 1. 1963; Verma & Chandra in Bull. Bot. Surv. India 22: 134. (1980) 1982.

Herbs, c 45 cm tall, annual; stems slender, cylindrical. Leaves c half as long as stem. Spikelets in a terminal head. Bracts 5, base with tuberculated hairs. Spikelets long, bristles 6, 3-scabrid, 3-plumose. Nuts with long beak.

Fls. & Frts. : September–November.

Illus. : C. B. Cl. Illustr. Cyper. t. 65(2). 1909; Kapoor, *et al.* *op. cit.*

Distrib. : Nagpur.

*R. rubra* (Lour.) Makino in Bot. Mag. Tokyo 17: 180, t. 7, f. 1A–B. 1903; Verma & Chandra in Bull. Bot. Surv. India 22: 132. (1980) 1982; Balakr. Fl. Jowai 2: 575. 1982. *Schoenus ruber* Lour. Fl. Cochinch. 141. 1790. *Rhynchospora wallichiana* Kunth, Enum. Pl. 2: 289. 1837; C. B. Cl. in Hook. f. Fl. Brit. India 6: 668. 1893; Cooke, Fl. Pres. Bombay 3: 415. 1958 (Repr. ed).

Perennial, tufted herbs, 30–50 cm tall; rootstock woody; stems thick. Leaves shorter than or as long as stems, linear. Spikelets brown in globose heads, 0.6–0.8 cm long, linear-lanceolate; glumes ovate, 0.4–0.5 cm long, reddish-brown; bristles 2–5. Nuts ovoid, biconvex, brown.

Fls. & Frts. : August–October.

Illus. : C. B. Cl. Illustr. Cyper. t. 64(1–7). 1909 (*Rhynchospora wallichiana*); Kern in Steenis, Fl. Males. 1, 7: 716, f. 99 & 717, f. 100. 1974; A.S. Rao & Verma, Cyper. N.E. India 51, f. 32–32d. 1982.

Distrib. : Kolhapur; Thane (Cooke, *op. cit.*).

*R. wightiana* (Nees) Steud. Syn. Pl. Glum. 2: 148. 1855; C. B. Cl. in Hook. f. Fl. Brit. India 6: 669. 1893; Cooke, Fl. Pres. Bombay 3: 415. 1958 (Repr. ed); Verma & Chandra in Bull. Bot. Surv. India 22: 134. (1980) 1982. *Haplostylis wightiana* Nees, Nov. Act. Ac. Caes. Leop. Car. 19, Suppl. 1: 101. 1845.

Herbs, erect, tufted, 15–30 cm high. Leaves 5.2–12.0 cm long, linear. Inflorescence of terminal heads, subtended by a few unequal bracts. Spikelets 0.5–0.7 x 0.1 cm, linear-lanceolate, brown. Nuts c 0.5 x 0.1 cm, linear-oblong, beaked.

Fls. & Frts. : September–January.

*Illus.* : C. B. Cl. Illustr. Cyper. t. 64(8-11). 1909; Kern in Steenis, Fl. Males. 1, 7: 719, f. 101.C-D. 1974.

*Distrib.* : Bombay; Chandrapur; Kolhapur; Nagpur; Nasik; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

## RIKLIELLA J. Raynal

1. All bracts spreading

1. Lower bracts erect

... *R. kernii*  
... *R. squarrosa*

**Rikliella kernii** (Raymond) J. Raynal in Adansonia 2, 13:155. 1973; Hooper in Sald. & Nicols. Fl. Hassan Dt. 696. 1976. *Scirpus kernii* Raymond in Nat. Canad. 86: 230. 1959; Donde in Bull. Bot. Surv. India 8: 358, f. 10. (1966) 1967; J. Raynal in Adansonia 2, 8: 95, t. 1, f. 1-5. 1968.

Stems up to 10 cm high. Leaves filiform, canaliculate, obtuse; sheaths papery, red-purple. Bracts 2-3. Spikelets oblong, obtuse; glumes c 0.1 cm long with an arista of equal length. Nuts c 0.06 x 0.04 cm, compressed, lenticular, attenuated at base, brown turning black, punctate.

*Fls. & Frts.* : November.

*Illus.* : Donde, *op. cit.*; J. Raynal, *op. cit.*

*Distrib.* : Rare in wet, sandy places. Nagpur.

**R. squarrosa** (L.) J. Raynal in Adansonia 2, 13: 154. 1973; Hooper in Sald. & Nicols. Fl. Hassan Dt. 696. 1976. *Scirpus squarrosus* L. Mant. 181. 1771; C. B. Cl. in Hook. f. Fl. Brit. India 6: 663. 1893; Cooke, Fl. Pres. Bombay 3: 410. 1958 (Repr. ed).

Herbs, annual; root-fibres capillary; stems 6.5-15.0 cm long, filiform, terete, striate. Leaves shorter than stem, filiform, acuminate, erect, smooth, margins involute. Spikelets solitary or 2-4 in a cluster, sessile, 0.33-0.6 cm long, globose or oblong, greenish-brown, many-flowered. Nuts c 0.1 cm long, obovoid-ellipsoid, trigonous, yellow, brown or ultimately black, apiculate.

*Fls. & Frts.* : August-December.

*Illus.* : C. B. Cl. Illustr. Cyper. t. 52(11-13). 1909; A.S. Rao & Verma, Cyper. N.E. India 46, f. 27-27a. 1982 (*Scirpus squarrosus*); Matthew, Illus. Fl. Tamilnadu Carnatic 2: 797. 1982.

*Distrib.* :  
Nasik; Osmar  
Thane; Yavatn

Sci

1. Nuts smooth

2. Glume

2. Glume

3. F

3. F

1. Nuts more

4. Hypo

5.

5.

4. Hyp

6.

6.

Sci

10: 299

Scirpus

India 6

'Nwala

H

capitat

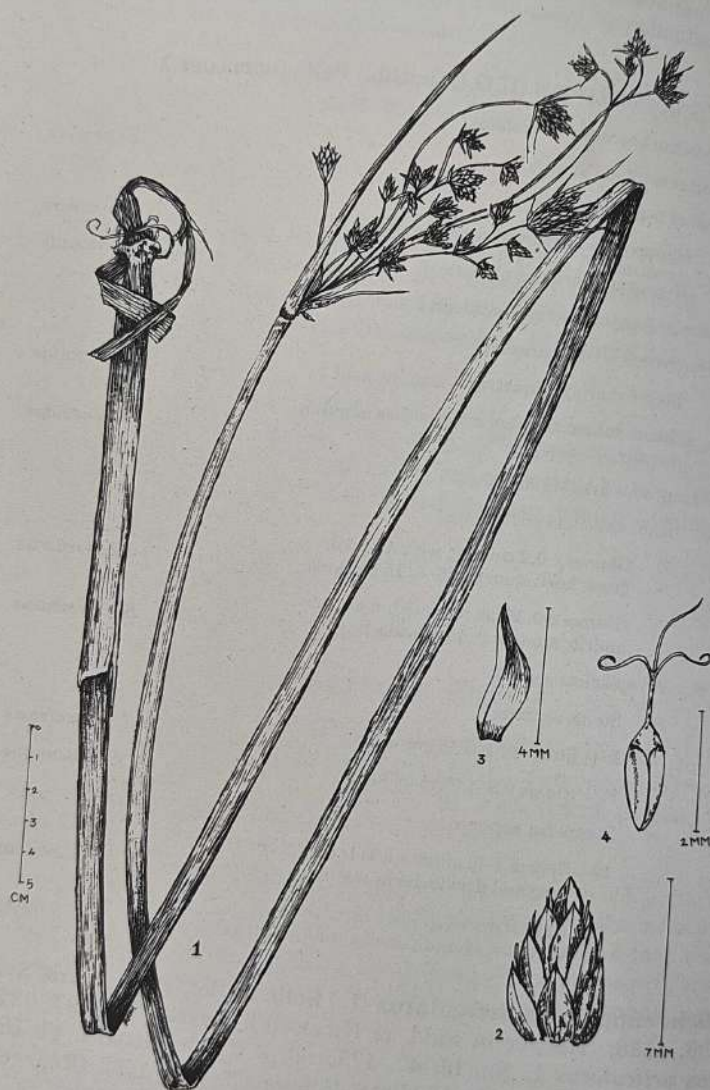
*Distrib.* : Akola; Amaravati; Chandrapur; Kolhapur; Nagpur; Nasik; Osmanabad; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane; Yavatmal.

*SCHOENOPLECTUS* (H.G.L.Reichb.) Palla (*nom.cons.*)

- |   |     |                        |
|---|-----|------------------------|
| 1. Nuts smooth or obscurely reticulate:                                   | ... | <i>S. grossus</i>      |
| 2. Glumes not 2-fid at apex   |     |                        |
| 2. Glumes 2-fid at apex:  | ... | <i>S. maritimus</i>    |
| 3. Hypogynous bristles retrorsely scabrid                                 | ... | <i>S. litoralis</i>    |
| 3. Hypogynous bristles plumose  |     |                        |
| 1. Nuts more or less transversely muricated:                              |     |                        |
| 4. Hypogynous bristles present:   |     |                        |
| 5. Stems sharply triquetrous, usually stout                               | ... | <i>S. mucronatus</i>   |
| 5. Stems subterete, often more or less angular, usually slender           | ... | <i>S. juncoides</i>    |
| 4. Hypogynous bristles absent :   |     |                        |
| 6. Some spikelets pedicellate :   |     |                        |
| 7. Glumes c 0.2 cm long with a broad, green keel; stems 0.05-0.15 cm wide | ... | <i>S. lateriflorus</i> |
| 7. Glumes c 0.35 cm long with a narrow midrib; stems c 0.1 cm wide        | ... | <i>S. corymbosus</i>   |
| 6. All spikelets sessile:   |     |                        |
| 8. Stems septate:   |     |                        |
| 9. Stems 0.1-0.15 cm wide   | ... | <i>S. senegalensis</i> |
| 9. Stems 0.3-1.0 cm wide  | ... | <i>S. articulatus</i>  |
| 8. Stems not septate:   |     |                        |
| 10. Spikes 1-6; glumes less than 0.2 cm long and deciduous at maturity    | ... | <i>S. supinus</i>      |
| 10. Spikes many; glumes more than 0.3 cm long and persistent at maturity  | ... | <i>S. roylei</i>       |

*Schoenoplectus articulatus* (L.) Palla in Bot. Engl. Jahrb. Syst. 10: 299. 1888; Hooper in Sald. & Nicols. Fl. Hassan Dt. 697. 1976. *Scirpus articulatus* L. Sp. Pl. 47. 1753; C. B. Cl. in Hook. f. Fl. Brit. India 6: 656. 1893; Cooke, Fl. Pres. Bombay 3: 406. 1958 (Repr. ed). 'Nwala'.

Herbs, 60-90 cm high, erect, tufted; stems spongy. Inflorescence capitate. Spikelets 0.8-1.0 cm long, ovoid-oblong, rusty-brown, sessile,



*Schoenoplectus corymbosus* (Roth ex R. & S.) J. Raynal  
1. Habit 2. Spikelet 3. Glume 4. Nut, Style & stigma

in laterally, stellately  
obovoid, triquetrous,

Fls. & Frts. : Ju

Illus. : C. B.  
Venkatanarayana, P  
[*Scirpus articulatus*  
T. Koyama in Dassa

Distrib. : Ak  
Nagpur; Pune; Raig

*S. corymbosus*  
Cat. Niger Pl. 342  
Veg. 2: 110. 1817.  
1775; C. B. Cl. in  
Bombay 3: 407. 19  
Soc. 37: 768. 1935.

Herbs, c 1 m  
Inflorescence lat  
pedunculate clust  
broadly ovate, ac  
yellow, c 0.2 cm l

Fls. & Frts.

Distrib. : B

*S. grossus*  
Koyama in Das  
*Scirpus grossus*  
India 6: 659. 1  
Kern in Steenis  
1: 230. 1832; C  
in Hook. f. op. c

Rootstock  
1.2-3.0 cm hig  
cm, linear, ac  
dark brown,  
contracted un  
erect or spre  
obovoid, trigo

Fls. & F

in laterally, stellately, spreading clusters of 15–60. Nuts c 0.2 cm long, obovoid, triquetrous, striate with transverse wavy lines.

Fls. & Frts. : June–April.

Illus. : C. B. Cl. Illustr. Cyper. t. 49(1–2). 1909; Tad. & Venkatanarayana, Handb. S. Indian Weeds, 428, f. 171. 1955 (Rev.ed.) [*Scirpus articulatus*]; Kern in Steenis, Fl. Males. 1, 7: 513, f. 31. 1974; T. Koyama in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 5: 163, f. 7. 1985.

Distrib. : Akola; Amaravati; Bhandara; Bombay; Chandrapur; Nagpur; Pune; Raigad; Satara; Sindhudurg; Thane; Yavatmal.

*S. corymbosus* (Roth ex R. & S.) J. Raynal in J.B. Lebrun *et al.* Cat. Niger Pl. 343. 1976. *Isolepis corymbosus* Roth ex R. & S. Syst. Veg. 2: 110. 1817. *Scirpus corymbosus* auct. non L. 1753, nec Forssk. 1775; C. B. Cl. in Hook. f. Fl. Brit. India 6: 657. 1893; Cooke, Fl. Pres. Bombay 3: 407. 1958 (Repr. ed); Blatt. & McC. in J. Bombay nat. Hist. Soc. 37: 768. 1935.

Herbs, c 1 m long; stems approximate, finely striate; sheaths few. Inflorescence lateral, from near the top of the stem. Spikelets in pedunculate clusters, 0.6–0.1 cm long, ellipsoid, reddish-brown; glumes broadly ovate, acute, keel prolonged into a short mucro. Nuts trigonous, yellow, c 0.2 cm long.

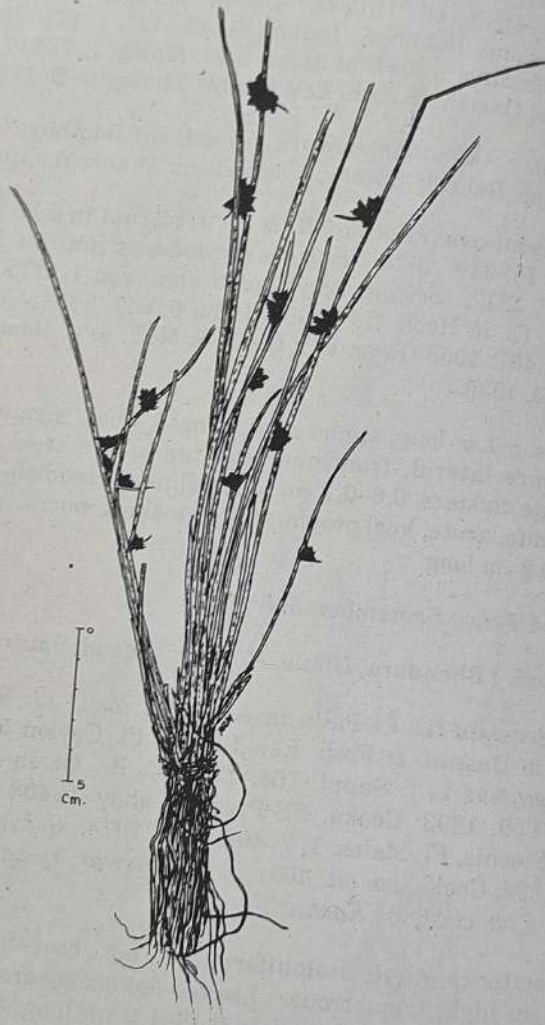
Fls. & Frts. : September–January.

Distrib. : Bhandara; Dhule; Nagpur; Raigad; Satara.

*S. grossus* (L. f.) Palla in Allg. Bot. Zeit. 17: Beibl. 3. 1911; T. Koyama in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 5: 154, f. 6. 1985. *Scirpus grossus* L. f. Suppl. 104. 1781; C. B. Cl. in Hook. f. Fl. Brit. India 6: 659. 1893; Cooke, Fl. Pres. Bombay 3: 408. 1958 (Repr. ed); Kern in Steenis, Fl. Males. 1, 7: 498, f. 22. 1974. *S. kysoor* Roxb. Fl. Ind. 1: 230. 1832; Cooke, *op. cit.* 409. *S. grossus* var. *kysoor* (Roxb.) C. B. Cl. in Hook. f. *op. cit.* 660. 'Kachar'.

Rootstocks stout, stoloniferous or not; root-fibres thick; stems 1.2–3.0 cm high, triquetrous. Leaves few or several, 60–90 x 1.2–2.0 cm, linear, acuminate. Spikelets 0.43–1.0 cm long, subglobose ovoid, dark brown, in large corymbiform decompound terminal open contracted umbels, 7.5–20.2 cm in diam., solitary on the top of rigid erect or spreading rays of various lengths. Nuts 0.1–0.2 cm long, obovoid, trigonous, with a minute conical tip, ashy-grey or yellowish.

Fls. & Frts. : September–November.



*Schoenoplectus lateriflorus* (Gmel.) Lye

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## FLORA OF MAHARASHTRA STATE

*Illus.* : Kern in Steenis, *op. cit.*; T. Koyama in Dassan. & Fosb. *op. cit.*; Matthew, Further *Illus.* Fl. Tamilnadu Carnatic 4: tt. 706 & 707. 1988.

*Distrib.* : Amaravati; Bombay; Kolhapur; Nagpur; Pune; Raigad; Thane.

*S. juncoides* (Roxb.) Palla in Engl. Bot. Jahrb. Syst. 10: 299. 1888; Hooper in Sald. & Nicols. Fl. Hassan Dt. 697. 1976. *Scirpus juncoides* Roxb. Fl. Ind. 1: 218. 1820; Kern in Steenis, Fl. Males. 1, 7: 512. 1974. *S. erectus sensu* C. B. Cl. in Hook. f. Fl. Brit. India 6: 656. 1893 *non* Poir. 1804.

Herbs, annual; stems slender, terete, 20–30 cm tall, tufted. Leaves reduced to bladeless sheaths. Inflorescence pseudolateral, capitate; bracts much shorter than stems, appearing like continuation of stem; spikelets sessile, 3–4 in a head, ovoid or elliptic-oblong, 0.8–1.2 cm long; glumes broadly ovate, concave, reddish-brown, keeled at apex, obtuse; bristles 5–6, stout, unequal, retrorsely scabrid. Nuts strongly dorsiventrally compressed, biconvex, broadly obovate, black.

*Fls. & Frts.* : February–March.

*Illus.* : C. B. Cl. *Illustr. Cyper. t.* 48(11–12). 1909 (*S. erectus*); A.S. Rao & Verma, *Cyper. N.E. India* 46, f. 24–24a. 1982 (*Scirpus juncoides*); Matthew, Further *Illus.* Fl. Tamilnadu Carnatic 4: t. 701. 1988.

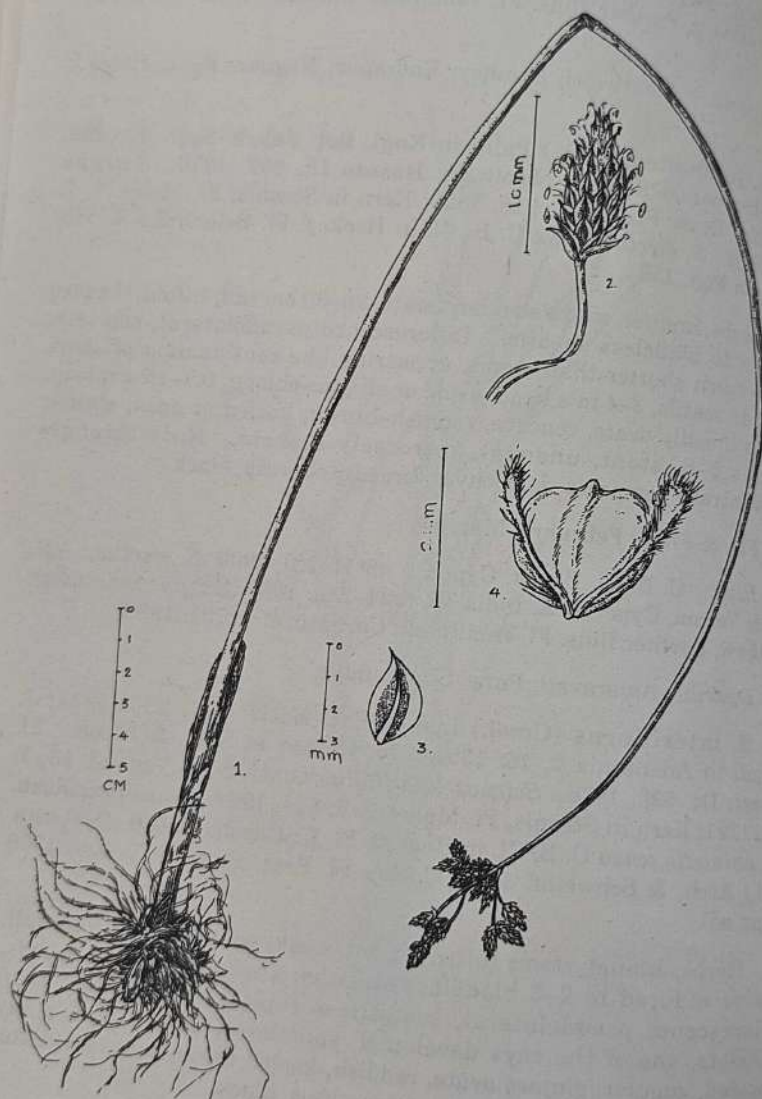
*Distrib.* : Amaravati; Pune; Sindhudurg.

*S. lateriflorus* (Gmel.) Lye in Bot. Notis. 124: 290. 1971; J. Raynal in *Adansonia* 2, 16: 139. 1976; Hooper in Sald. & Nicols. Fl. Hassan Dt. 698. 1976. *Scirpus lateriflorus* Gmel. Syst. Veg. ed. 13, 1: 127. 1791; Kern in Steenis, Fl. Males. 1, 7: 514. 1974. *S. supinus* Roxb. var. *uninodis sensu* C. B. Cl. in Hook. f. Fl. Brit. India 6: 656. 1893 *non* (Del.) Asch. & Schweinf. 1887; Cooke, Fl. Pres. Bombay 3: 406. 1958 (Repr. ed.).

Herbs, annual; stems tufted, noded, weak, subterete, 8–15 cm tall. Leaves reduced to 2–3 bladeless sheaths, slightly broad upwards. Inflorescence pseudolateral, sometimes capitate, usually of 4–10 spikelets, one of the rays developed; spikelets oblong-ovoid, many flowered, angular; glumes ovate, reddish, keeled throughout, apiculate. Nuts broadly elliptic to orbicular, triquetrous, black.

*Fls. & Frts.* : August–May.

*Illus.* : A.S. Rao & Verma, *Cyper. N.E. India* 46, f. 23. 1982 (*Scirpus lateriflorus*); Matthew, Further *Illus.* Fl. Tamilnadu Carnatic 4: t. 702. 1988.



*Schoenoplectus litoralis* (Schrad.) Palla ssp. *subulatus* (Vahl) T. Koyama  
1. Habit 2. Spikelet 3. Glume 4. Nut

*Distrib.* : Ahm  
Kolhapur; Nagp  
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*S. litoralis* (S  
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*Distrib.* : Ahmednagar; Akola; Amaravati; Bombay; Chandrapur; Kolhapur; Nagpur; Nasik; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

*S. litoralis* (Schr.) Palla in Verh. K.K. Zool.- Bot. Ges. Wien 38, Sitzb. 49. 1888 (*littoralis*). *Scirpus litoralis* Schrad. Fl. Germ. 1: 142, t. 5, f. 7. 1806; C. B. Cl. in Hook. f. Fl. Brit. India 6: 659. 1893; Cooke, Fl. Pres. Bombay 3: 408. 1958 (Repr. ed).

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|-----------------|---------------------------|
| 1. Styles 2-fid | ... <i>ssp. litoralis</i> |
| 1. Styles 3-fid | ... <i>ssp. subulatus</i> |

*ssp. litoralis.*

Herbs, c 100 cm tall, perennial; rhizomes stout; stems spongy, trigonous. Sheaths splitting into fibres. Inflorescence of lateral, compound umbels. Stem projecting beyond umbel. Spikelets large, clustered, red-brown, in drooping umbels. Bristles up to 7, plumose. Nuts obovate, biconvex, smooth, apiculate, brown.

*Fls. & Frts.* : August-March.

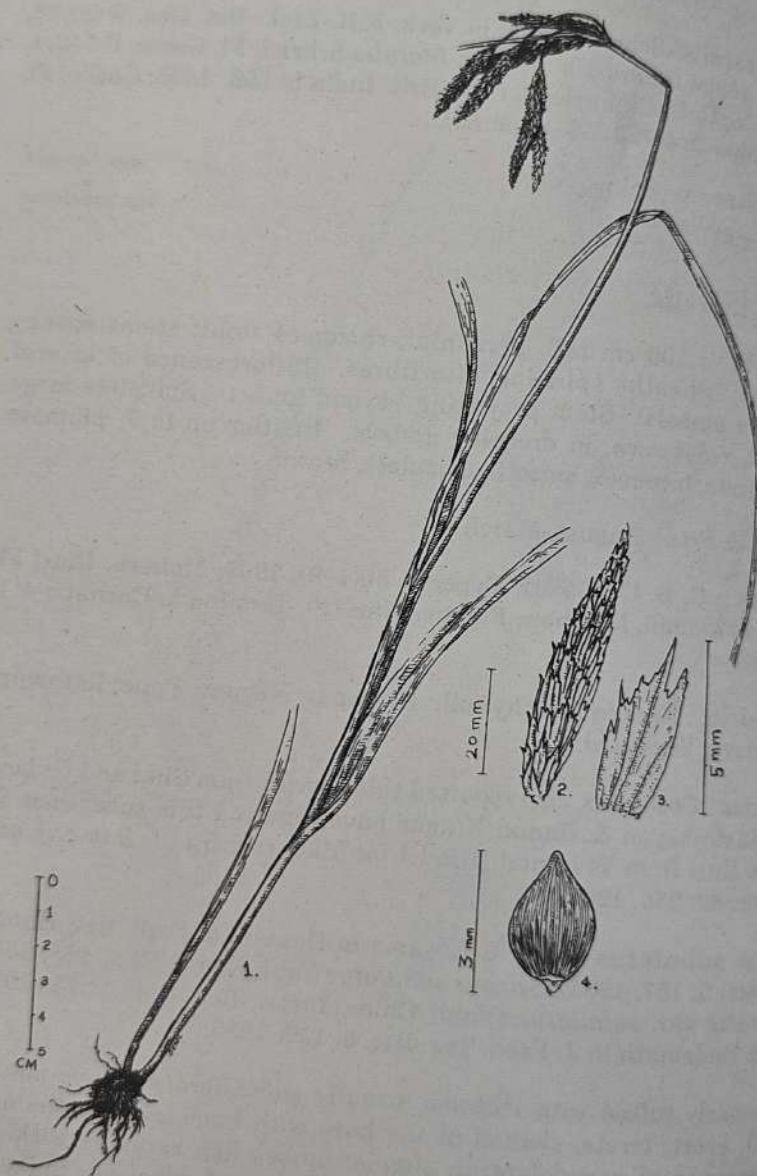
*Illus.* : C. B. Cl. Illustr. Cyper. t. 50(1-9). 1909; Mahesh. Illus. Fl. Delhi f. 227. 1966; Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 703. 1988.

*Distrib.* : Rare in marshy soil. Kolhapur; Nagpur; Pune; Ratnagiri; Sindhudurg; Yavatmal.

*Notes* : Cooke (*op. cit.*) reported this species from Sind and Gujarat only. Karthikeyan & Anand Kumar have reported this subspecies for the first time from Yavatmal District for Maharashtra (*J. Bombay nat. Hist. Soc.* 80: 256. 1983).

*ssp. subulatus* (Vahl) T. Koyama in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 5: 157. 1985. *Scirpus subulatus* Vahl, Enum. Pl. 2: 268. 1806. *S. litoralis* var. *subulatus* (Vahl) Chiov. Instit. Bot. Cat. 1: 15. 1928; Shah & Badrinath in J. Econ. Tax. Bot. 6: 139. 1985.

Loosely tufted with rhizome, usually stoloniferous; culms 60-100 cm tall, erect, terete, clothed at the base with bladeless sheaths only. Inflorescence of pseudolateral, simple, umbel-like corymbs with 3-7 unequal ascending rays terminated by a cluster of spikelets. Spikelets 0.7-1.2 x 0.3-0.4 cm, oblong-ovate or elliptic-ovate, many-flowered, rust-coloured. Nuts 0.2 x 0.15-0.17 cm, broadly obovate, biconvex, rounded to mucronate at apex, cuneate-contracted at base.



*Schoenoplectus maritimus* (L.) Lye  
1. Habit 2. Spikelet 3. Glume 4. Nut

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Fls. & Frts. : August–June.

Distrib. : Thane (Shah & Badrinath, *op. cit.*).

*S. maritimus* (L.) Lye in Blyttia 29: 145. 1971. *Scirpus maritimus* L. Sp. Pl. 51. 1753; C. B. Cl. in Hook. f. Fl. Brit. India 6: 658. 1893; Cooke, Fl. Pres. Bombay 3: 407. 1958 (Repr. ed); Kern in Steenis, Fl. Males. 1, 7: 499. 1974. *Bolboschoenus maritimus* (L.) Palla in Koch, Syn. Deutsch. Schweiz. Fl. ed. 3, 3: 2532. 1904.

Rhizomes creeping, bearing tubers; stems 30–90 cm long, stout, triquetrous. Leaves numerous, often as long as stem, 0.6–0.75 cm broad, keeled; sheaths long. Inflorescence terminal or subterminal, umbellate with rays of unequal length. Spikelets 3–8 or solitary on each ray, 1.0–2.5 cm long, ovate-oblong or cylindric, reddish-brown. Nuts c 0.33 cm long, obovoid, obtusely trigonous, umbonate, pale yellow, nearly white.

Fls. & Frts. : November–January.

Distrib. : Ahmednagar; Bombay; Dhule; Kolhapur (Cooke, *op. cit.*); Pune; Raigad; Ratnagiri; Thane.

*S. mucronatus* (L.) Palla in Verh. K.K. Zool.–Bot. Ges. Wien 38, Sitzb. 49. 1888; T. Koyama in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 5: 160. 1985. *Scirpus mucronatus* L. Sp. Pl. 73. 1753; C. B. Cl. in Hook. f. Fl. Brit. India 6: 657. 1893.

Herbs, perennial, rhizomatous; stems 40–60 cm tall, spongy. Sheaths membranous, mouth oblique. Heads lateral near the apex of stem; bracts patent. Spikelets sessile, 1.0–1.5 cm long, ovate; glumes broadly ovate, acute, nerved. Bristles 6, scabrid. Nuts obovoid, trigonous, transversely wrinkled, black.

Fls. & Frts. : October–May.

Illus. : Kern in Steenis, Fl. Males. 1, 7: 511, f. 30. 1974 (*Scirpus mucronatus*); Hooper in Sald. & Nicols. Fl. Hassan Dt. 656, f. 110C. 1976; Ugemuge, Fl. Nagpur Dt. t. 176. 1986; Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 704. 1988.

Distrib. : Bhandara; Kolhapur; Nagpur; Pune.

*S. roylei* (Nees) Ovczinn. & Czukav. Fl. Tadjikist. 2: 40. 1963; J. Raynal in Adansonia 2, 16: 150. 1976. *Isolepis roylei* Nees in Wight, Contrib. Bot. Ind. 107. 1834. *Scirpus quinquefarius* Buch.–Ham. ex Boeck. in Linnaea 36: 701. 1870; C. B. Cl. in Hook. f. Fl. Brit. India 6: 657. 1893; Cooke, Fl. Pres. Bombay 3: 407. 1958 (Repr. ed).

Herbs, 30–40 cm high, erect, tufted, annual; stem terete. Spikelets free in lateral, sessile, globose clusters, drying brownish-straw coloured, each spikelet 0.6–1.2 x 0.4–0.5 cm, subterete. Nuts c 0.13 cm long, obovoid, trigonous, apiculate, rugose, white at first becoming brown, ultimately black.

*Fls. & Frts.* : September–October.

*Illus.* : C. B. Cl. Illustr. Cyper. t. 48(8–10). 1909 (*Scirpus quinquefarius*).

*Distrib.* : Ahmednagar; Bombay (Cooke, *op. cit.*); Dhule; Nagpur; Pune; Raigad; Sholapur.

**S. senegalensis** (Hochst. ex Steud.) Palla ex J. Raynal in J.B. Lebr. *et al.* Cat. Niger Pl. 344. 1976 & in Adansonia 2, 16: 149. 1976; Hooper in Sald. & Nicols. Fl. Hassan Dt. 699. 1976. *Isolepis senegalensis* Hochst. ex Steud. Syn. Pl. Glum. 2: 96. 1855 non *Scirpus senegalensis* Lam. 1791.

Herbs, c 15 cm tall, annual. Bracts exceeding the stem. Spikelets sessile. Glumes orbicular, papery with a broad nerved keel. Nuts unequally trigonous.

*Fls. & Frts.* : September–November.

*Illus.* : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t.796. 1982 & Further Illus. Fl. Tamilnadu Carnatic 4: t. 705. 1988.

*Distrib.* : Nagpur.

**S. supinus** (L.) Palla in Engl. Bot. Jahrb. 10: 299. 1889; J. Raynal in Adansonia 2, 16: 145. 1976. *Scirpus supinus* L. Sp. Pl. 49. 1753; C. B. Cl. in Hook. f. Fl. Brit. India 6: 655. 1893; Cooke, Fl. Pres. Bombay 3: 406. 1958 (Repr. ed); Blatt. & McC. in J. Bombay nat. Hist. Soc. 37: 766. 1935.

Herbs, 15–30 cm high. Spikelets 3–8, ellipsoid-oblong; glumes imbricate, ovate, acute. Nuts obovoid, rugose, umbonate, black.

*Fls. & Frts.* : July–February.

*Illus.* : C. B. Cl. Illustr. Cyper. t. 48(13–14). 1909 (*Scirpus supinus*).

*Distrib.* : Bhandara; Chandrapur; Kolhapur; Ratnagiri; Satara; Thane.

1. Hypogynous
1. Hypogynous
2. Spike head
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| 1. Hypogynous bristles present:   |     |                       |
| 2. Spikelets sessile, usually many, in simple clusters or heads; short sedges | ... | <i>S. affinis</i>     |
| 2. Spikelets pedicelled, many, in umbels; tall sedges                         | ... | <i>S. tuberosus</i>   |

*Scirpus affinis* Roth in R. & S. Syst. Veg. 2: 140. 1817. *S. maritimus* var. *affinis* (Roth) C. B. Cl. in Hook. f. Fl. Brit. India 6: 659. 1893; Cooke, Fl. Pres. Bombay 3: 408. 1958 (Repr. ed). *Bolboschoenus maritimus* ssp. *affinis* (Roth) T. Koyama in Brittonia 31: 284. 1979.

Herbs, perennial, solitary or tufted, 15–40 cm high. Leaves 8–17 x 0.3–0.5 cm, narrowly linear, keeled. Spikelets 1–2 x 0.5–1.0 cm, often subterminal, capitate, ovate-oblong or cylindric. Nuts c 0.3 cm long, obovoid, obtusely trigonous, umbonate.

Fls. & Frts. : September–December.

Illus. : Lakshminarasimhan & Sharma, Fl. Nasik Dt. 496, f. 49. 1991 (*Bolboschoenus maritimus* ssp. *affinis*).

Distrib. : Bombay; Dhule; Jalgaon; Kolhapur; Nasik; Pune; Thane.

*S. michelianus* L. Sp. Pl. 52. 1753; C. B. Cl. in Hook. f. Fl. Brit. India 6: 662. 1893; Cooke, Fl. Pres. Bombay 3: 410. 1958 (Repr. ed); Dhore & Joshi, Fl. Melghat Tiger Res. 185. 1988.

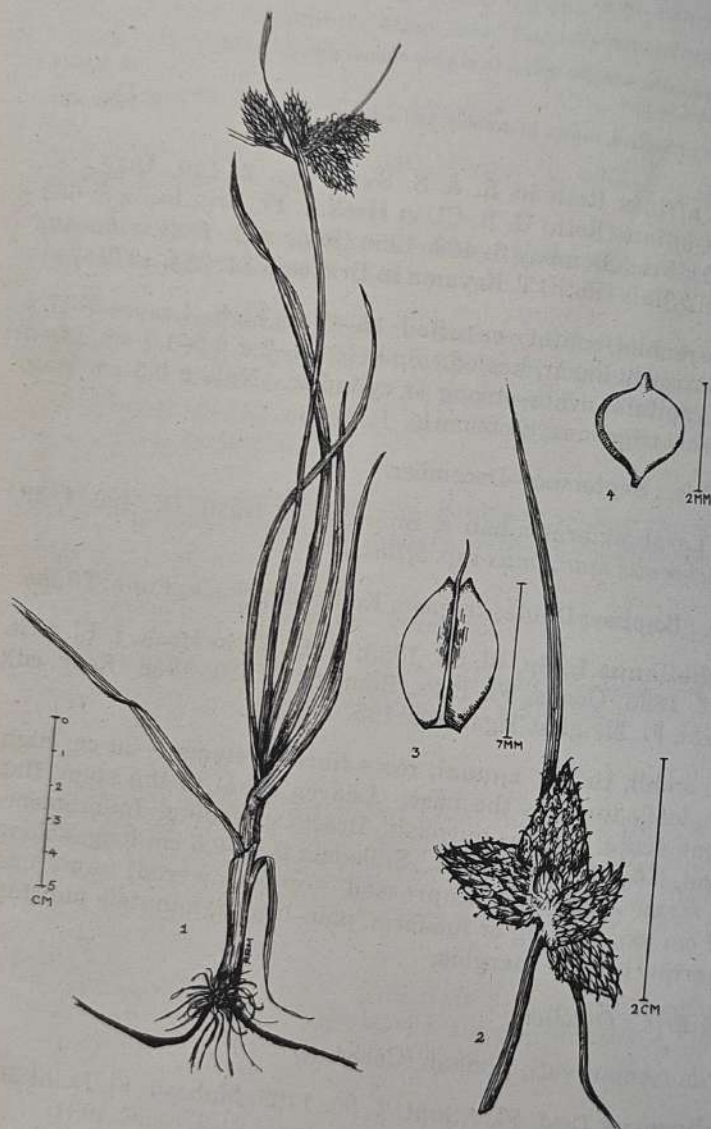
Herbs, small, tufted, annual; roots fibrous; stems 5–20 cm high, triquetrous, leafy towards the base. Leaves equal to the stem, flat, papery, linear, acute; sheaths purplish. Bracts spreading. Inflorescence a dense head, 0.6–2.0 cm in diam. Spikelets 0.33–0.5 cm long, oblong, subterete, straw-coloured, compressed, many-flowered, numerous. Nuts c 0.1 cm long, oblong or fusiform, pale-brown, minutely punctate and with narrow hyaline margins.

Fls. & Frts. : October.

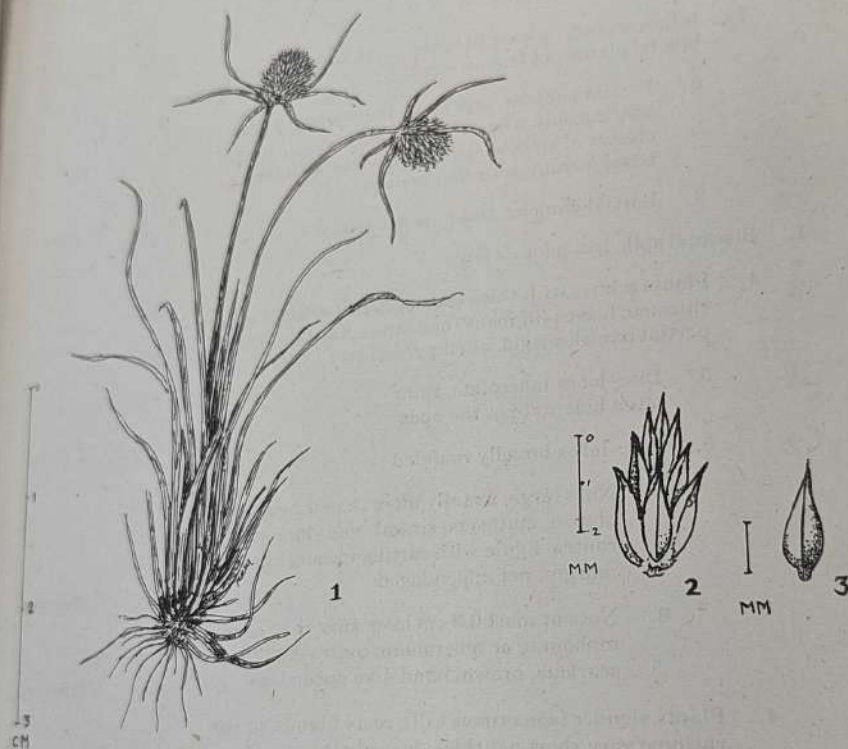
Distrib. : Amaravati; Konkan (Cooke, *op. cit.*).

*S. tuberosus* Desf. Fl. Atlant. 1: 50. 1798; Mahesh. Fl. Delhi 363. 1963; Verma & Chandra in Rec. Bot. Surv. India 21(2) : 266. 1981.

Herbs, 30–100 cm high, erect; rhizomes creeping; tubers woody; stems stout, trigonous. Leaves often as long as the stem, coriaceous. Umbels simple or compound. Spikelets dull or dark brown, ovate, oblong or elliptic. Nuts plano-convex, smooth, polished, brown.



*Scirpus affinis* Roth  
1. Habit 2. Spikelet 3. Glume 4. Nut



*Scirpus michelianus* L.  
1. Habit 2. Spikelet 3. Glume

*Fls. & Frts.* : November–January.

*Distrib.* : Rare. Dhule.

### SCLERIA P. Berg.

1. Bisexual spikelets many :
  2. Inflorescence devoid of foliaceous bracts; plants lemon-scented
  2. Inflorescence, at least in lower parts, with foliaceous bracts; plants not lemon-scented :
    3. Partial panicles very loose, their primary axis bearing only a few branches with widely spaced cluster of spikelets; nuts trigonous with three basal ferruginous depressions ... *S. pergracilis*
    3. Partial panicles and nuts not as above ... *S. lithosperma*
1. Bisexual spikelets none or few :
  4. Plants robust with thick (except *S. psilorrhiza*) woody rhizome; leaves (in many) caudate-sctaccous at tip; partial panicles rigid, often pyramidal :
    5. Disc-lobes lanceolate, thin, often bidentate at the apex ... *S. corymbosa*
    5. Disc-lobes broadly rounded :
      6. Nuts large, usually more than 0.3 cm long, obtuse, mucous, smooth and shining; contra-ligule with cartilaginous, incrassate margin, not appendaged ... *S. levis*
      6. Nuts at most 0.3 cm long, smooth or cancellate, umbonate or mucronate; contra-ligule with scarious, brown, band-like appendage ... *S. psilorrhiza*
  4. Plants slender (sometimes tall); roots fibrous, or the rhizome very short not thick; leaves not caudate-sctaccous at tip; panicles narrow, the lower axillary panicles often remote, reduced to spikes, sometimes very short :
    7. Terminal partial panicles pseudolateral due to erect posture of uppermost bract, laterals on stout, often recurved peduncles ... *S. terrestris*
  7. Inflorescence not as above :
    8. Nuts rugose; disc lobes subquadrate, apiculate ... *S. rugosa*
    8. Nuts smooth or with rectangular or oval pits, never rugose; disc lobes various :
      9. Nuts smooth ... *S. foliosa*
      9. Nuts smooth ... *S. annularis*

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# FLORA OF MAHARASHTRA STATE

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9. Nuts with prominent pits, more or less in vertical rows :
  10. Disc lobes subquadrate with a broad truncate top
  10. Disc lobes lanceolate or oblong with sub-obtuse, acute or acuminate tip : ... *S. tessellata*
  11. Nuts globose, cancellate with almost square pits in vertical rows, ferruginous hairy on the walls between pits; beak capillary, mostly purplish-black, rarely white
  11. Nuts and beak not as above : ... *S. biflora*
  12. Disc lobes lanceolate, acuminate, with reddish-brown striations ... *S. stocksiana*
  12. Disc lobes ovate-oblong, acute or subobtuse without reddish-brown striations ... *S. parvula*

**Scleria annularis** Nees ex Steud. Syn. Pl. Glum. 2: 176. 1855; C. B. Cl. in Hook. f. Fl. Brit. India 6: 687. 1894; Cooke, Fl. Pres. Bombay 3: 418. 1958 (Repr. ed.); Kern in Blumea 11: 200. 1961 & in Steenis, Fl. Males. 1, 7: 744. 1974; Verma & Chandra in Bull. Bot. Surv. India 32: 78. (1990) 1992.

Herbs, annual; roots fibrous, solitary or tufted. Leaves flat, linear-lanceolate. Spikelets in terminal panicles. Nuts shorter than glumes, ovoid or ellipsoid, smooth, shining white.

*Fls. & Frts.* : September–December.

*Illus.* : Kern, *op. cit.* 195, f. 7 g. & in Steenis, *op. cit.* 726, f. 106–25.

*Distrib.* : Bombay; Chandrapur; Nagpur; Thane.

**S. biflora** Roxb. Fl. Ind. 3: 573. 1832; C. B. Cl. in Hook. f. Fl. Brit. India 6: 687. 1894; Cooke, Fl. Pres. Bombay 3: 419. 1958 (Repr. ed.); Kern in Steenis, Fl. Males. 1, 7: 743. 1974; Bhargavan & Rajan in J. Econ. Tax. Bot. 9: 254. 1987; Verma & Chandra in Bull. Bot. Surv. India 32: 76. (1990) 1992. *S. tessellata* Willd. var. *biflora* (Roxb.) Blatt. & McC. in J. Bombay nat. Hist. Soc. 37: 777. 1935.

Herbs, annual, 20–30 cm high. Leaves 6–20 x 0.2–0.4 cm, ensiform, abruptly narrowed to an obtuse apex; sheaths narrowly winged. Inflorescence of 2–4 panicles. Fruiting spikelets 0.2–0.3 cm long. Nuts c 0.2 cm long.

*Fls. & Frts.* : September–October.

*Illus.* : C. B. Cl. Illustr. Cyper. t. 127(1–2). 1909; Kern, *op. cit.* 745, f. 113; A.S. Rao & Verma, Cyper. N.E. India 59, f. 42–42c. 1982.

*Distrib.* : Chandrapur; Nasik; Pune; Raigad; Ratnagiri; Sindhudurg; Thane.

*S. corymbosa* Roxb. Fl. Ind. 3: 574. 1832; C. B. Cl. in Hook. f. Fl. Brit. India 6: 687. 1894; Kern in Steenis, Fl. Males. 1, 7: 740. 1974; Verma & Chandra in Bull. Bot. Surv. India 32: 63, f. 3a-c. (1990) 1992.

Usually stout perennials, up to 2.5 m tall; rhizome creeping. Leaves 0.7–2.5 cm broad; sheaths smooth or scaberulous. Inflorescence paniculate, up to 75 cm long, lateral panicles, densely corymbosely branched. Spikelets bisexual and male, c 0.45 cm long; glumes ovate-lanceolate, acute or mucronulate, stramineous, brown-striolate. Nuts 0.3–0.4 x 0.2–0.25 cm, ovoid, glistening white.

*Fls. & Frts.* : July–February.

*Illus.* : Verma & Chandra, *op. cit.*

*Distrib.* : Maharashtra (Verma & Chandra, *op. cit.*).

*S. foliosa* Hochst. ex A. Rich. Tent. Fl. Abyss. 2:509. 1851; Verma & Chandra in Bull. Bot. Surv. India 32: 67, f. 9a-d. (1990) 1992.

Annuals or perennials with a short rootstock, 15–80 cm tall. Leaves shorter than- to equalling stem, 0.2–0.7 cm broad, margins and midrib antorsely scabrous towards tip; sheaths narrowly winged. Inflorescence paniculate; partial panicles solitary or binate. Spikelets unisexual; glumes acute or mucronate, stramineous, brown striolate. Nuts ovoid or sometimes oblong, 0.25–0.4 x 0.22–0.25 cm, umbonulate.

*Fls. & Frts.* : September–November.

*Illus.* : Verma & Chandra, *op. cit.*

*Distrib.* : Maharashtra (Verma & Chandra, *op. cit.*).

*S. levis* Retz. Obs. Bot. 4: 13. 1786; Kern in Blumea 11: 164. 1961 & in Steenis, Fl. Males. 1, 7: 732. 1974; Verma & Chandra in Bull. Bot. Surv. India 32: 63. (1990) 1992. *S. hebecarpa* Nees in Wight, Contrib. 117. 1834; C. B. Cl. in Hook. f. Fl. Brit. India 6: 689. 1894; Cooke, Fl. Pres. Bombay 3: 419. 1958 (Repr. ed). *S. hebecarpa* var. *pubescens* (Steud.) C. B. Cl. in Hook. f. *op. cit.*

Herbs, 50–100 cm tall, perennial. Leaves linear, flat, 3-nerved, ligulate. Inflorescence of terminal, paniculate cymes; spikelets lanceolate; glumes ovate, pale-brown. Disc lobes ovate; nuts subglobose, glossy white to blue black.

*Fls. & Frts.* : November–June.

*Illus.*  
India 59, f.

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Pl. 51. 17

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*Illus.* : Kern, *op. cit.* 724, f. 104; A.S. Rao & Verma, *Cyper.* N.E. India 59, f. 44-44c. 1982.

*Distrib.* : Kolhapur; Nagpur; Sindhudurg; Thane.

**S. lithosperma** (L.) Swartz, *Prodr.* 18. 1788; C. B. Cl. in Hook. f. *Fl. Brit. India* 6: 685. 1894; Cooke, *Fl. Pres. Bombay* 3: 418. 1958 (Repr. ed); Kern in Steenis, *Fl. Males.* 1, 7: 740. 1974; Verma & Chandra in *Bull. Bot. Surv. India* 32: 61. (1990) 1992. *Scirpus lithospermus* L. Sp. Pl. 51. 1753.

- |   |     |                         |
|---|-----|-------------------------|
| 1. Nut surface smooth   | ... | var. <i>lithosperma</i> |
| 1. Nut surface rugulose by transversely undulate ferruginous ridges | ... | var. <i>linearis</i>    |

var. ***lithosperma***.

Herbs, perennial with rhizome, nodulose; stems slender, triquetrous, 25-30 cm tall. Leaves rigid, narrowly linear, greyish-green, aggregated towards middle of stems, gradually narrowed, 0.2-0.4 cm wide. Inflorescence slender, narrow, almost in spicate panicles; spikelets bisexual, 0.3-0.5 cm long, ferruginous; glumes ovate to lanceolate. Nuts ovoid, obtusely trigonous, shining, white.

*Fls. & Frts.* : October-November.

*Illus.* : C. B. Cl. *Illustr. Cyper.* t. 123(1-4). 1909; Kern in Steenis, *op. cit.* 725, f. 105-19; Matthew, *Further Illus. Fl. Tamilnadu Carnatic* 4: tt. 708 & 709. 1988.

*Distrib.* : Bombay; Nagpur; Raigad; Sindhudurg.

var. ***linearis*** Bth. *Fl. Austr.* 7: 430. 1878; Kern in Steenis, *Fl. Males.* 1, 7: 740. 1974; Verma & Chandra in *Bull. Bot. Surv. India* 32: 63, f. 2c. (1990) 1992. *S. lithosperma* var. *roxburghii* C. B. Cl. in Hook. f. *Fl. Brit. India* 6: 686. 1894.

*Illus.* : Verma & Chandra, *op. cit.*

*Distrib.* : Maharashtra (Verma & Chandra, *op. cit.*)

**S. parvula** Steud. *Syn. Pl. Glum.* 2: 174. 1855; Kern in Blumea 11: 202. 1961 & in Steenis, *Fl. Males.* 1, 7: 746. 1974; Verma & Chandra in *Bull. Bot. Surv. India* 32: 76. (1990) 1992. *S. tessellata sensu* C. B. Cl. in Hook. f. *Fl. Brit. India* 6: 686. 1894 *p.p. non* Willd. 1805; Cooke, *Fl. Pres. Bombay* 3: 418. 1958 (Repr. ed).

Herbs, perennial, tufted, 30-45 m high. Leaves 15-19 x 0.6-0.7 cm, linear. Inflorescence of terminal and lateral, elongated panicles. Spikelets greenish-brown. Nuts 0.1-0.2 cm long.

*Illus.* : Kern in Steenis, *op. cit.* 726, f. 106-27.

*Distrib.* : In marshy soil, on edges of streams. Akola; Amaravati; Bombay; Chandrapur; Nagpur; Nasik; Osmanabad; Pune; Raigad; Thane; Yavatmal.

Notes : *S. tessellata* sensu Clarke (op. cit.) from India is a mixture of three species viz., *S. mikawana* Makino, *S. parvula* Steud. and *S. tessellata* Willd. *S. parvula* Steud. was reported from Yavatmal District for Maharashtra for the first time by Karthikeyan & Anand Kumar (J. Bombay nat. Hist. Soc. 80: 256. 1983). A key to differentiate *S. tessellata* Willd. from *S. parvula* Steud. is given below.

1. Lateral panicles erect; peduncles rigid, usually short; achenes cylindric to ellipsoid-cylindric, 0.15–0.2 cm in diam., glabrous, obscurely or distinctly striate-lacunose, the lacunae vertically elongated ... *S. tessellata*
1. Lateral panicles pendulous; peduncles long and flexuous; achenes obovoid-globose to oblong-ellipsoid, 0.15–0.22 cm in diam., deeply and squarely lacunose, usually hairy on the walls ... *S. parvula*

**S. pergracilis** (Nees) Kunth, Enum. Pl. 2: 354. 1837; C. B. Cl. in Hook. f. Fl. Brit. India 6: 685. 1894; Kern in Blumea 11: 196. 1961; Verma & Chandra in Bull. Bot. Surv. India 32: 61. (1990) 1992. *Hypoporum pergracile* Nees apud Arn. in Edinb. New Phil. J. 17: 267. 1834.

Annuals, c 35 cm tall, tufted. Stems slender, trigonous. Leaves as long as stem, bright green. Spikelets clustered in a long slender spike; cluster of 2-5 spikelets distant. Nuts trigonous, tuberculated, beaked, grey.

*Fls. & Frts.* : October–December.

*Illus.* : C. B. Cl. *Illustr. Cyper. t.* 121(1-5). 1909; Kern *op. cit.* 195, f. 7b; A.S. Rao & Verma, *Cyper. N.E. India* 59, f. 41-41e. 1982.

*Distrib.* : Nagpur.

*S. psilorrhiza* C. B. Cl. in Hook. f. Fl. Brit. India 6: 691. 1894; Kern in Steenis, Fl. Males. 1, 7: 735, f. 104–11. 1974; Verma & Chandra in Bull. Bot. Surv. India 32: 70. (1990) 1992.

Perennial sedges, robust; rhizome creeping, clothed by distant ovate striate red scales; stems c 60 cm, scabrous. Leaves c 30.0 x 0.6 cm, gradually narrowed into a slender acute tip; sheath 3-winged,

ligule ovate. Panicle  
2-3-together, lanceolate,  
1-2 cm long, ovoid, obtuse,  
shining.

Fls. & Frts. : C

Illus. : Kern i

*Distrib.* : Rar

*S. rugosa* R  
& Blumea 11: 20  
Hist. Soc. 84: 258  
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687. 1894 non P  
non Steud. 1855

Culms 30-  
subobtuse. Pa  
Nuts c 0.15 cm

Fls. &amp; Fr

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S. stock  
f. Fl. Brit. In  
(Repr. ed); B  
Verma & Ch

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Fls. 8

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ligule ovate. Panicles 60–75 x 1 cm, stout. Spikelets unisexual, 2–3-together, lanceolate in dense, narrow, terminal panicles. Nuts c 0.5 cm long, ovoid, obtuse, scarcely at all trigonous or hairy, smooth, shining.

*Fls. & Frts.* : October–December.

*Illus.* : Kern in Steenis, *op. cit.*

*Distrib.* : Rare along moist walls. Chandrapur.

*S. rugosa* R.Br. Prodr. 240. 1810; Kern in Reinwardtia 6: 76. 1961 & Blumea 11: 206, f. 8. 1961; S.M. & M.R. Almeida in J. Bombay nat. Hist. Soc. 84: 258. 1987; Verma & Chandra in Bull. Bot. Surv. India 32: 78. (1990) 1992. *S. zeylanica sensu* C. B. Cl. in Hook. f. Fl. Brit. India 6: 687. 1894 non Poir. 1806. *S. flaccida* C. B. Cl. in Hook. f. *op. cit.* 688 non Steud. 1855.

Culms 30–60 cm long. Leaves c 0.43 cm broad, lanceolate, apex subobtus. Panicles axillary, distant, small. Spikelets all unisexual. Nuts c 0.15 cm in diam., ovoid, smooth or obscurely reticulate.

*Fls. & Frts.* : September–November.

*Distrib.* : Bombay; Thane.

*S. stocksiana* Boeck. in Linnaea 38: 474. 1874; C. B. Cl. in Hook. f. Fl. Brit. India 6: 687. 1894; Cooke, Fl. Pres. Bombay 3: 419. 1958 (Repr. ed); Blatt. & McC. in J. Bombay nat. Hist. Soc. 37: 779. 1935; Verma & Chandra in Bull. Bot. Surv. India 32: 76. (1990) 1992.

Herbs, perennial, tufted; stems 10–30 cm long. Leaves equalling or shorter than stems, linear, finely acuminate, multistriate, margins scabrous. Inflorescence of axillary and terminal, leafy panicles. Spikelets oblong, obtuse. Nuts 0.3–0.4 cm long, globosely ellipsoid, densely cancellate–reticulate, white.

*Fls. & Frts.* : July–October.

*Distrib.* : Kolhapur; Nagpur; Nasik; Pune; Ratnagiri; Satara; Sindhudurg.

*S. terrestris* (L.) Fass. in Rhodora 26: 159. 1924; Kern in Blumea 11: 170, f. 5A–C. 1961 & in Steenis, Fl. Males. 1, 7: 733. 1974; Verma & Chandra in Bull. Bot. Surv. India 32: 68. (1990) 1992. *Zizania terrestris* L. Sp. Pl. 991. 1753. *Scleria radula* Hance in Ann. Sci. Nat. Bot. 18: 232. 1862; C. B. Cl. in Hook. f. Fl. Brit. India 6: 691. 1894. *S. elata* Thw. Enum. Pl. Zeyl. 353a (excl. C. P. 825) 1864; C. B. Cl. in Hook. f. *op. cit.* 690. *S. melanostoma* Nees ex Boeck. in Linnaea 38: 514. 1874; C. B. Cl.

in Hook. f. *op. cit.* 693. *S. elata* var. *decolorans* C.B.Cl. in Hook. f. *op. cit.* 690. *S. elata* var. *latior* C. B. Cl. in Hook. f. *op. cit.*

Herbs, robust; stems 1.5 m tall, stout, sharply triangular, angles scabrid. Leaves 40–60 x 0.9–1.5 cm, 3-nerved, margins ciliate; sheaths sharply trigonous. Inflorescence of large panicles. Spikelets sessile, shortly peduncled, unisexual, 0.3–0.4 cm long; female ovate, male lanceolate. Nuts globose or broadly ellipsoid, white or pale-brown, quadrately tessellate or reticulate, ridges hairy, disc bluntly 3-lobed, lobes short.

*Fls. & Frts.* : September–October.

*Illus.* : Kern, *op. cit.* & in Steenis, *op. cit.* 724, f. 104–9; Hooper in Sald. & Nicols. Fl. Hassan Dt. 656, f. 110B. 1976; A.S. Rao & Verma, *Cyper.* N.E. India 59, f. 45. 1982; Matthew, *Illus. Fl. Tamilnadu Carnatic 2*: tt. 798 & 799. 1982.

*Distrib.* : Occasional in the undergrowth in deciduous forests. Sindhudurg.

*S. tessellata* Willd. Sp. Pl. 4: 315. 1805; C. B. Cl. in Hook. f. Fl. Brit. India 6: 686. 1874; Verma & Chandra in Bull. Bot. Surv. India 32: 75, f. 18a–b. (1990) 1992.

Annuals, tufted, 20–60 cm tall. Leaves shorter than-to exceeding stem, 0.2–0.6 cm broad; sheaths narrowly to prominently winged, pubescent. Inflorescence paniculate, usually copious with several solitary or binate partial panicles. Spikelets unisexual, 0.5–0.6 cm long; glumes ovate-lanceolate, acute, stramineous, brown striolate with a green midrib. Nuts ellipsoid, umbonulate, 0.27–0.3 x 0.2–0.22 cm.

*Fls. & Frts.* : September–March.

*Illus.* : Verma & Chandra, *op. cit.*

*Distrib.* : Maharashtra (Verma & Chandra *op. cit.*).

#### SOROSTACHYS Steud.

- |   |     |                         |
|---|-----|-------------------------|
| 1. Involucral bracts 3; glumes short, 0.1 cm long, 3-nerved, apex obtuse; nuts small, 0.05–0.09 cm long, yellow fuscous           | ... | <i>S. pulchellus</i>    |
| 1. Involucral bracts 2; glumes large, 0.25 cm long, 5-nerved, apex semi-denticulate; nuts large, 0.15–0.17 cm long, matures black | ... | <i>S. leucocephalus</i> |

*Sorostachys leucocephalus* (Retz.) Lye in Nord. J. Bot. 1:190. 1981. *Cyperus leucocephalus* Retz. Obs. Bot. 5: 11. 1789; C. B. Cl. in

Hook. f. Fl.  
1958 (Repr.  
Hook. f. *op.*

Herbs  
thickened  
sometimes  
0.6–1.5 cm  
pale-brown  
pale-brown

*Fls.*

*Illus.*  
*leucocephalus*

*Distrib.*  
Thane.

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*Cyperus*  
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Hook. f. Fl. Brit. India 6:602. 1893; Cooke, Fl. Pres. Bombay 3:377. 1958 (Repr. ed). *C. coronarius* Kunth, Enum. Pl. 2:44. 1837; C. B. Cl. in Hook. f. op. cit. 619.

Herbs, slender; rhizomes short; stems 8–15 cm tall, slightly thickened below the inflorescence. Leaves shorter than stems, sometimes longer, 0.05–0.10 cm wide. Heads globose, terminal, solitary, 0.6–1.5 cm across, bracts 1–4 cm long; spikelets elliptic, 0.3–0.5 cm long, pale-brown; glumes oblong-lanceolate, 0.1–0.2 cm long, whitish or pale-brown, stigmas 3. Nuts ellipsoid, trigonous.

Fls. & Frts. : June–August.

Illus. : Kern in Reinwardtia 3: 40, f. 5a–a5. 1954 (*Cyperus leucocephalus*).

Distrib. : Bombay; Dhule; Kolhapur; Pune; Raigad; Sindhudurg; Thane.

**S. pulchellus** (R. Br.) Lye in Nord. J. Bot. 1: 189, f. 4. 1981. *Cyperus pulchellus* R. Br. Prodr. 213. 1810; Kern in Steenis, Fl. Males. 1, 7: 632. 1974; Naithani & Raiz. in Indian Forester 103: 412. 1977.

Herbs, slender; stems swollen; culms 6–40 x 0.04–0.1 cm, covered by reddish-brown to blackish sheaths. Leaves 2–15 x 0.05–0.2 cm, scabrid on margin and midrib; sheaths green to light reddish-brown, the basal sheaths darker. Inflorescence of congested anthela with sessile spikelets only. Spikelets 0.4–0.8 x 0.1–0.25 cm. Nutlets obovate, flattened–triangular, grey to pale brown, minutely punctulate.

Fls. & Frts. : July–August.

Illus. : Kern in Reinwardtia 3: 41, f. 5a, b1–b 6. 1954 (*Cyperus pulchellus*); Lye, op. cit.

Distrib. : Sindhudurg; Thane.

## POACEAE (GRAMINEAE)

1. Large shrubs or trees, woody with large culm-sheaths; leaves with transverse veins, articulate on sheaths : ... DENDROCALAMUS
2. Spikelets in globose heads; pericarp fleshy or crustaceous ... BAMBUSA
2. Spikelets in panicles; pericarp thin, adnate to seed :
3. Filaments free
3. Filaments adnate or connate :

4. Stamens 3
4. Stamens
1. Herbs or shrubs, not woody, without culm-sheaths; leaves with parallel veins, not articulate on sheaths :
5. Spikelets 1-many-flowered, breaking up at maturity above the more or less persistent glumes, or if falling entire, then not 2-flowered, with the lower floret male or barren and the upper hermaphrodite, usually more or less laterally compressed or terete :
6. Grasses unawned :
7. Spikelets 1-flowered :
8. Inflorescence a panicle :
9. Spikelets laterally compressed; glumes absent or reduced to an obscure, hyaline, entire or 2-lobed rim; lemma and palea obliquely oblong, strongly 1-keeled, keels bristly-ciliate; usually in or around marshy places ... **YUSHANIA**  
...**PSEUDOXYPHENANTHERA**
9. Spikelets terete; glumes well developed, the lower sometimes minute; lemma ovate or oblong, glabrous, usually in dry places ... **LEERSIA**
8. Inflorescence of spikes or spiciform racemes :
10. Spikes 2-8, umbellate ... **SPOROBOLUS**
10. Racemes or spikes solitary :
11. Spikelets on very short, stout pedicels, appressed to the rachis ... **CYNODON**
11. Spikelets sessile :
12. Often the lower glume suppressed or when present minute, hyaline; the upper glume narrowly lanceolate, acuminate, 5-ribbed, ribs armed with hooked spinules, spikelets in clusters usually of 2, facing each other, seldom 3-6; racemes erect ... **ZOYSIA**
12. Both lower and upper glumes present, similar; upper glume not as above; spikelets alternate and secund in two closely approximate rows; spikes often curved ... **TRAGUS**  
... **MICROCHLOA**

7. Spikelet  
13. Inf  
14.  
14.

13.

7. Spikelets 2-many-flowered :
13. Inflorescence of spikes, heads or racemes :
14. Inflorescence of oblong or globose heads ... AELUROPIUS
14. Inflorescence of spikes or racemes : ... LEPTOCHLOA
15. Inflorescence of racemes ...
15. Inflorescence of spikes : ...
16. Spikes solitary :
17. Rhachis compressed, undulating, alternately distichously hollowed; spikelets more or less sunk in the hollows; lower glume minute or absent ... OROPETIUM
17. Rhachis straight, slender, not hollowed; spikelets secund; lower glume well developed ... ERAGROSTIELLA
16. Spikes few in a whorl, occasionally 1-2 solitary spikes below the whorl :
18. Culms creeping and rooting at nodes; basal sheaths woolly at base ... OCHTHIOCHLOA
18. Culms erect, not rooting at nodes; basal sheaths glabrous at base ... ELEUSINE
13. Inflorescence of panicles :
19. Shrubs ... THYSANOLAENA
19. Herbs :
20. Florets 2 :
21. Panicles loose, spikelets many; glumes deciduous; upper lemma becoming indurated ... ISACHNE
21. Panicles contracted or spiciform, spikelets few; glumes persistent; upper lemma membranous ... COELACHNE
20. Florets 3-many :
22. Leaves with transverse veins; upper lemmas usually with soft, erect, ultimately deflexed tubercle based bristles ... CENTOTHECA
22. Leaves parallel-veined; lemmas without deflexed bristles :
23. Panicles spiciform ... DESMOSTACHYA
23. Panicles lax or contracted :
24. Spikelets 3-flowered ... PHALARIS
24. Spikelets few-many-flowered ... ERAGROSTIS

## 6. Grasses awned :

## 25. Spikelets 1-flowered:

26. Lemmas muticous; glumes tapering into long capillary awns

26. Lemmas awned; glumes awned or muticous :

27. Rhachilla produced beyond the floret

27. Rhachilla not produced beyond the floret, or if produced then not filiform or aristate :

28. Glumes often reduced or absent:

29. Glumes minute, subulate; culms usually erect

29. Glumes absent; culms floating

28. Glumes well developed :

30. Awn of lemma usually with 3 setae

30. Awn of lemma without setae :

31. Glumes entire

31. Glumes usually notched;

32. Glumes long-awned

32. Glumes not long-awned, at most shortly aristate

## 25. Spikelets 2-many-flowered :

33. Lemmas muticous; glumes aristate

33. Lemmas awned; glumes awned or muticous :

34. Inflorescence of plumose panicles :

35. Rhachilla long-hairy

35. Rhachilla glabrous

34. Inflorescence never plumose :

36. Spikelets 2-flowered; upper floret hermaphrodite; lower male, barren or hermaphrodite :

37. Both glumes shortly awned; lower lemma aristate; upper lemma 2-lobed, lobes aristate, bearded at base of the lobes; awn from between the lobes with a flat twisted column; panicle compact, head-like

37. Glumes acute or acuminate; lower lemma muticous; upper lemma occasionally lobed, lobes with bristles or not, never bearded at base; awned between lobes or at apex, occasionally muticous; column of awn not flat; panicles effuse or contracted

PEROTIS

SCHOENEFELDIA

ORYZA

HYCRORYZA

ARISTIDA

GARNOTIA

POLYPOGON

MUHLENBERGIA

DINEBRA

PHRAGMITES

ARUNDO

JANSENELLA

ARUNDINELLA

36. Spikelets few or florets rec

38. Upper awn in

39. I

39. I

38. Upper bifid

40.

40.

36. Spikelets few- many-flowered, often uppermost floret or florets reduced, lower hermaphrodite, rarely reduced :
38. Upper lemma 2-lobed at the tip with a spirally twisted awn in between :
39. Lemma glabrous ...
39. Lemma hairy ...
38. Upper lemma not lobed at the tip, entire, sometimes bifid or cleft but with awn not spirally twisted :
40. Lemmas entire or 2-lobed, awned from the back ...
40. Lemmas entire or 2-or more-lobed, awned from the apex or from the sinus :
41. Glumes toothed or notched at apex :
42. Glumes usually notched at apex ...
42. Lower glume toothed on one margin ...
41. Glumes entire, muticous or aristate :
43. Lemmas 5-many-nerved ...
43. Lemmas 1-3-nerved :
44. Glumes muticous :
45. Lowest lemma 2-4-toothed, mucronate ...
45. Lemmas 2-fid or entire :
46. Spikes 1-2; perfect florets up to 4; empty lemmas muticous ...
46. Spikes 3-many; perfect floret 1; empty lemmas awned :
47. Keeled lemma laterally compressed; grain trigonous or subterete ...
47. Keeled lemma dorsally compressed; grain narrow ...
44. Lower or upper or both glumes aristate :
48. Spikelets secund in the inflorescence :
49. Inflorescence of sessile or shortly peduncled clusters of 4-5 spikelets on a flattened, solitary axis; lemmas entire and cuspidate or 3-cuspidate; rhachilla produced beyond the upper lemma and occasionally bearing 1-2 empty scales; glumes aristate ...

INDOPOA

DANTHONIDIUM

AVENA

ACRACHNE

TRIPOGON

LOLIUM

DIPLACHNE

TETRAPOGON

CHLORIS

ENTEROPOGON

MELANOCENCHRIS

PEROTIS

SCHOENEFELDIA

ORYZA

HYGROLYZA

ARISTIDA

GARNOTIA

POLYPOGON

ENBERGIA

DINEBRA

MITES

UNDO

49. Inflorescence of umbelled or racemosely arranged spikes or spiciform racemes; spikelets with 1-perfect floret below and 1-3 imperfect florets above; lemmas obtuse or 2-fid, awned; glumes acuminate or the upper aristate :
50. Keeled lemma laterally compressed; grain trigonous or subterete
50. Keeled lemma dorsally compressed; grain narrow
48. Spikelets not secund :
51. Inflorescence of densely crowded globose clusters of spikelets continuous in a cylindrical mass, lobed or interrupted, on a simple terminal axis
51. Inflorescence of umbellate spikes
5. Spikelets 2-flowered, falling entire at maturity, usually with the upper floret hermaphrodite and the lower male or barren and if the latter, often reduced to the lemma or rarely the lemma entirely absent, all alike or more often differing in size, shape and structure, frequently dorsally compressed :
52. Male and female spikelets in separate inflorescences or in different parts of the same inflorescence and of different appearance; lemmas hyaline or membranous and thinner than the glumes :
53. Female spikelets completely enclosed in a metamorphosed leaf-sheath which takes the form of a spherical or cylindrical, osseous or ivory bead-like structure
53. Female spikelets not enclosed in a false involucre as above :
54. Lower glume of the female spikelet 3-lobed, the central lobe larger than the others
54. Lower glume of the female spikelet not 3-lobed, at most with 2 or 3 small teeth
52. Spikelets all hermaphrodite, or with male or barren and hermaphrodite spikelets mixed in the same inflorescence and so arranged that a male or barren spikelet is near a hermaphrodite spikelet or if unisexual then the lemma of the fertile floret indurated :
55. Spikelets solitary or paired, more or less similar; glumes usually membranous, the lower usually smaller or sometimes suppressed; lower lemma often resembling the upper glume in texture; upper lemma papery to tough and rigid, usually awnless :
56. Grasses awned :
57. Upper lemma shortly aristate

CHLORIS

ENTEROPOGON

ELYTROPHORUS

DACTYLOCTENIUM

COIX

TRILOBACHNE

CHIONACHNE

ALLOTROPIS

57. Upper lem

58. Lower

58. Lower

59.

59.

56. Grasses unaw

61. Male an

61. Both se

62. Inf

63

6

62.

- |   |     |               |
|---|-----|---------------|
| 57. Upper lemma muticous :  | ... | OPLISMENUS    |
| 58. Lower glume awned   |     |               |
| 58. Lower glume muticous :  | ... | PSEUDORAPHIS  |
| 59. Lemmas muticous   |     |               |
| 59. Lower lemma awned :   |     |               |
| 60. Upper glume entire, acuminate or awned                                  | ... | ECHINOCHLOA   |
| 60. Upper glume emarginate or 2-lobed, aristate from sinus                  | ... | RHYNCHELYTRUM |
| 56. Grasses unawned :   |     |               |
| 61. Male and female spikelets in different head-like globose inflorescences | ... | SPINIFEX      |
| 61. Both sexes mixed in all spikelets :                                     |     |               |
| 62. Inflorescence of panicles :   |     |               |
| 63. Spikelets usually subtended by an involucre of bristles :               |     |               |
| 64. Bristles rigid; upper lemma often rugose or transversely striate        | ... | SETARIA       |
| 64. Bristles rather soft; upper lemma more or less smooth                   | ... | PENNISSETUM   |
| 63. Spikelets not subtended by bristles :                                   |     |               |
| 65. Spikelets with an annular callus at base                                | ... | ERIOCHLOA     |
| 65. Spikelets without an annular callus at base :                           |     |               |
| 66. Spikelets not gibbous   | ... | PANICUM       |
| 66. Spikelets gibbous :   |     |               |
| 67. Spikelets strongly laterally compressed                                 | ... | CYRTOCOCCUM   |
| 67. Spikelets not laterally compressed, turgid                              | ... | SACCIOLEPIS   |
| 62. Inflorescence of spiciform racemes arranged on a common axis:           |     |               |
| 68. Spikelets solitary or 2-4, clustered                                    | ... | CENCHRUS      |
| 68. Spikelets solitary, binate or ternate, not clustered :                  |     |               |
| 69. Lower glume usually absent, if present, minute, scale-like :            |     |               |
| 70. Spikelets elliptic or elliptic-oblong or lanceolate                     | ... | DIGITARIA     |
| 70. Spikelets orbicular, oblong or ovate, secund, 2-seriate                 | ... | PASPALUM      |

69. Lower glume well-developed :

71. Lower glume turned away from axis :

72. Spikelets flattened or depressed;  
upper lemma mucronate

72. Spikelets usually turgid; upper lemma acute

71. Lower glume turned towards axis :

73. Inflorescence panicle-like

73. Inflorescence not as above

55. Spikelets often paired, with one sessile and the other pedicelled, those of each pair similar or more often dissimilar, rarely solitary and all alike; glumes as long as the spikelet and enclosing the florets, more or less rigid and firmer than the lemmas which are both hyaline or membranous; upper lemma usually awned :

74. Spikelets solitary, pedicelled or almost sessile at the nodes of a tough or fragile rhachis :

75. Rhachis of the racemes jointed, fragile; spikelets pedicelled; glumes rounded on the back and not keeled

75. Rhachis of the racemes not jointed, tough, flat or filiform; spikelets almost sessile or shortly pedicelled; glumes keeled

74. Spikelets in pairs, similar or dissimilar, one sessile and the other pedicelled or one short, the other long-pedicelled, rarely the pedicelled reduced or very rarely the sessile reduced to a scale or two and the pedicelled spikelets developed (*Pogonachne*) :

76. Spikelets of each pair similar, the sessile and the pedicelled hermaphrodite; the pedicelled male, rarely the sessile spikelet male and the pedicelled spikelet hermaphrodite (*Lophopogon*); joints of the panicle thin, linear or somewhat expanded at top :

77. Spikelets arranged in more or less ample panicles of compound racemes arranged along a central axis; upper lemma awnless or awned from the entire tip or from between two terminal teeth :

78. Rhachis of racemes tough or tardily breaking up

78. Rhachis of the racemes breaking up :

79. Spikelets awned

79. Spikelets unawned

... *UROCHLOA*

... *PASPALUM*

... *PSEUDORACHIS*

... *BRACHIARIA*

... *POGONACHNE*

... *DIMERIA*

... *IMPERATA*

... *SPODIOPOGON*

... *SACCHARUM*

77. Spikelets arranged in a single or in several racemes, the latter being digitate or arranged along a very short main axis; spikelets in pairs; rarely pedicelled spikelets reduced to pedicel (*Apocypis*) : ... **APOCYPIS**
80. Lower glume broadly truncate; pedicelled spikelet much reduced, usually represented by pedicel only, rarely present; stamens two ... **EULALOPSIS**
80. Lower glume not markedly truncate; pedicelled spikelet developed; stamens usually three, rarely two : ... **EULALIA**
81. Upper lemma two-toothed ... **EULALOPSIS**
81. Upper lemma deeply cleft : ... **EULALIA**
82. Lower glume 2-keeled, depressed between keels ... **EULALIA**
82. Lower glume convex on the back, at least at maturity : ... **EULALIA**
83. Racemes solitary ... **POGONATHERUM**
83. Racemes two or more ... **LOPHOPOGON**
76. Spikelets in each pair dissimilar, the sessile hermaphrodite, the pedicelled male or sterile, or completely absent or if more or less similar then the joints of the raceme and the pedicel thick and swollen : ...
84. Joints of the rachis and pedicel of the pedicelled spikelet (if not much reduced) swollen, 3-angled, rounded, flattened : ...
85. Sessile spikelet with a male and a hermaphrodite floret; upper lemma awned : ...
86. Racemes 1-noded, reduced to three heteromorphic spikelets, enclosed in a boat-shaped spathe ... **APLUDA**
86. Racemes many-noded, not contained in a spathe-like sheath : ...
87. Racemes two to many; lower glume of sessile spikelet often with nodules on the margins or transversely furrowed : ...
88. Pedicelled spikelets developed ... **ISCHAEMUM**
88. Pedicelled spikelet reduced to a linear, curved pedicel ... **THELEPOGON**
87. Raceme solitary, terminal; lower glume of sessile spikelet not transversely grooved : ...
89. Spikelet solitary, pedicelled, forming a true raceme ... **POGONACHNE**
89. Spikelets in pairs, a sessile and a pedicelled forming a false raceme : ...
90. Lower glume of sessile spikelet when young with two tufts of hairs; upper glumes with one tuft; ligule membranous ... **TRIPLOPOGON**

90. Lower and upper glumes without tufts of hair; ligule of few hairs ... SEHIMA
85. Sessile spikelet with a hermaphrodite floret only or occasionally with a male floret below; upper lemma unawned :
91. Spikelets similar; rhachis tough ... HEMARTHRIA
91. Spikelets more or less dissimilar (spikelets solitary in *Ophiuros*); rhachis usually breaking up :
92. Lower glume of sessile spikelet with a broad wing on each keel, ridged, perforated or sculptured; pedicel and joint fused ... GLYPHOCHELOA
92. Sessile spikelet not winged on keels of lower glume; if winged at all, then only at apex and narrowly :
93. Racemes covered with shaggy hairs ... ELIONURUS
93. Racemes mostly glabrous, not conspicuously hairy :
94. Axis of spikes tough, not breaking up ... HEMARTHRIA
94. Axis of spikes fragile :
95. Sessile spikelets in pairs at each node of axis ... MNESITHEA
95. Sessile spikelet solitary at each node of axis :
96. Spikelets paired, one sessile, the other pedicelled ... ROTTBOELLIA
96. Spikelets solitary, sessile, the pedicelled suppressed or rudimentary ... OPHIUROS
84. Joints of rhachis and pedicel narrow, seldom thickened upwards :
97. Inflorescence a terminal raceme :
98. Lower glume of sessile spikelets when young with two tufts of hairs; ligule membranous ... TRIPLOPOGON
98. Lower glume of sessile spikelet without tufts of hairs; ligule a row of hairs ... SEHIMA
97. Inflorescence a panicle :
99. Spikelets in racemes which are not interrupted by spathes or solitary at ends of branches; the racemes collected into whorled panicles; joints and pedicels not furrowed :
100. Spikelets solitary at ends of branches ... CLEISTACHNE

100. Spikelets in pa

101. Spikelets

101. Spikelets

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an99. Panicles of racem  
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pedicelled :103. Upper lem  
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FLORA OF MAHARASHTRA STATE

387

100. Spikelets in pairs or threes :
101. Spikelets dorsally compressed
101. Spikelets laterally compressed : ... SORGHUM
102. Spikelets in groups, each consisting of a sessile and two more or less reduced pedicelled spikelets or a raceme of several pairs; lower glume smooth, not tuberculate
102. Racemes with many pairs of spikelets arranged in whorls; lower glumes tuberculate ... CHRYSOPOGON
99. Panicles of racemes which are interrupted by spathes, or the espatheate racemes digitate or in pairs or solitary and terminal, sometime the joints and/or pedicels with a translucent median furrow :
103. Upper lemma of the sessile spikelet with a basal awn; pedicelled spikelet reduced ... ARTHRAXON
103. Upper lemma of sessile spikelet awned from tip or from cleft or upper lemma reduced to hyaline base of awn, rarely unawned :
104. Margins of lower glumes inturned and rounded at sides, at most keeled upwards; awn usually hairy :
105. Upper lemma 2-lobed or 2-cleft and awned from sinus ... BHIDEA
105. Upper lemma not 2-lobed or cleft, stipitate and passing into awn :
106. Racemes surrounded at base by an involucre of homogamous spikelets :
107. Involucral spikelets pedicellate, deciduous; callus of fertile spikelets short, truncate or obtuse ... ISEILEMA
107. Involucral spikelets sessile, not deciduous; callus of fertile spikelet pointed ... THEMEDA
106. Racemes without an involucre :
108. Glumes often garnished with tubercle-based bristles; lower glume of sessile spikelet terete, grooved or not on back, usually covered with short hairs ... HETEROPOGON
108. Glumes glabrous; lower glume of sessile spikelet keeled and broadly winged, glabrous ... PSEUDODICHANTHIUM
104. Margins of lower glume of sessile spikelets sharply infolded, 2-keeled; awn glabrous :
109. Inflorescence not spathaceous :
110. Pedicelled spikelet usually reduced, often to a pedicel ... PSEUDOSORGHUM

110. Pedicelled spikelet well developed :
111. Inflorescence a solitary raceme
111. Inflorescence of digitate, fascicled, corymbose racemes or panicles ... EUCALYPTUS
109. Inflorescence spathaceous :
112. Basal sheaths white-or cream-tomentose; raceme solitary ... DICHANTHUM
112. Inflorescence usually a panicle, rarely solitary, corymbose or digitate racemes (*Andropogon*) : ... DICHANTHUM
113. Joints thickened upwards, toothed at apex :
114. Joints stout with a scarious, cupuliform, more or less toothed terminal appendage; inflorescence of terminal, solitary, spiciform racemes frequently collected into a false panicle ... SCHIZANTHUM
114. Joints slender, usually 2-3-toothed at apex, densely ciliate on margins; inflorescence of solitary, paired or corymbose, digitate, spiciform racemes, sometimes forming a false panicle ... ANDROPOGON
113. Joints not toothed at apex :
115. Inflorescence of subumbellate fascicles of racemes, 2-jointed, the basal with one sessile and one pedicelled spikelet, the upper with one sessile and 2-pedicelled spikelets ... PSEUDANTHISTURIA
115. Inflorescence of paired racemes, usually one sessile, the other peduncled, collected into a frequently much branched panicle; joints and pedicels of lowest pairs sometimes swollen (occasionally mucous or imperfectly awned in *Cymbopogon citratus* and *C. nardus*) ... CYMBOPOGON

ACRACHNE Wight & Arn. ex Chiov.

*Acrachne racemosa* (Heyne ex R. & S.) Ohwi in Bull. Tokyo Sci. Mus. n.18: 1.1947, Bor, Grass. Ind. 487.1960. *Eleusine racemosa* Heyne ex R. & S. Syst. Veg. 2: 583.1817. *E. verticillata* Roxb. Fl. Ind. 1: 346.1820; Hook. f. Fl. Brit. India 7: 295.1896; Blatt. & McC. Bombay Grass. 260.1935. 'Chinkhe'.

Herbs, erect or suberect, c 30 cm high. Leaves 6-13 x 0.2-0.3 cm, linear. Spikes few or many, 3-7 cm long. Spikelets 0.2-0.5 cm long, lowest lemma truncate or 2-toothed. Grains coarsely rugose, grooved or hollowed on one face, pericarps caducous.

Fls. & Frts.: July-December.

Illus. : Blatt. & McC. op. cit. t. 174; Mahesh. Illus. Fl. Delhi f. 262.1966; Patunkar, Grass. Marathw. 231, f. 71. 1980.

*Distrib.* : Akola; Amaravati; Aurangabad; Dhule; Nasik; Pune; Thane.

AELUROPUS Trin.

*Aeluropus lagopoides* (L.) Trin. ex Thw. Enum. Pl. Zeyl. 374. 1864 ('*lagopodioides*'); Bor, Grass. Ind. 380. 1960. *Dactylis lagopoides* L. Mant. 33. 1767. *Aeluropus villosus* Trin. ex C. A. Mey. Verz. Pfl. Cauc. 18. 1831; Hook. f. Fl. Brit. India 7: 334. 1896; Cooke, Fl. Pres. Bombay 3: 567. 1958 (Repr. ed.). *A. repens* (Desf.) Parl. Fl. Ital. 1: 462. 1848; Blatt. & McC. Bombay Grass. 277. 1935. *Dola-gavat*.

Perennials, 8–20 cm long, rigid, tufted; roots long, wiry. Leaves up to 4.0 x 0.2 cm, narrowly lanceolate, acuminate, flat or convolute. Panicle a globose, elliptic or oblong head of densely crowded spikelets, up to 2 x 1 cm. Spikelets 0.25–0.35 x 0.2–0.25 cm, elliptic-oblong.

*Fls. & Frts.* : January–May.

*Illus.* : Mahesh. Illus. Fl. Delhi f. 247. 1966; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 800. 1982.

*Distrib.* : Bombay; Raigad; Ratnagiri; Thane.

ALLOTEROPSIS C. B. Presl

*Alloteropsis cimicina* (L.) Stapf in Prain, Fl. Trop. Afr. 9: 487. 1919; Blatt. & McC. Bombay Grass. 129. 1935; Bor, Grass. Ind. 276. 1960. *Milium cimicinum* L. Mant. Alt. 184. 1771. *Axonopus cimicinus* (L.) P. Beauv. Ess. Agrost. 12. 1812; Hook. f. Fl. Brit. India 7: 64. 1896; Cooke, Fl. Pres. Bombay 3: 441. 1958 (Repr. ed.). '*Sinri*'.

Herbs, perennial, tufted, erect or decumbent c 30 cm high. Leaves 2.5–7.5 x 0.5–1.0 cm, ovate or ovate-lanceolate. Spikes 4–6, 4.0–7.5 cm long, digitate, terminal. Spikelets c 0.4 cm long, narrowly elliptic-ovate, green; palea of lower lemma 2-fid or partite and that of upper lemma with basal auricled flaps. Grains ovate, flattened.

*Fls. & Frts.* : July–November.

*Illus.* : Blatt. & McC. *op. cit.* t. 83; Mahesh. Illus. Fl. Delhi f. 256. 1966; Patunkar, Grass. Marathw. 129, f. 39. 1980; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 801. 1982.

*Distrib.* : Common all over on gravelley slopes of hills, in open grasslands as well as in cultivated fields.

## ANDROPOGON L.

**Andropogon pumilus** Roxb. Fl. Ind. 1: 277. 1820; Hook. f. Fl. Brit. India 7: 170. 1896; Cooke, Fl. Pres. Bombay 3: 495. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 93. 1935; Bor, Grass. Ind. 93. 1960. 'Baerki', 'Diwartan', 'Gondval', 'Lalgawat', 'Tamabadgota'.

Herbs, annual; culms 15–45 cm high, tufted, suberect or geniculate and decumbent below. Leaves 7.5–12.5 x 0.25–0.43 cm, linear, finely acuminate. Racemes c 2 cm long in equal pairs on slender peduncles. Sessile spikelets up to 0.5 cm long, awned; pedicelled unawned; spathes flattened.

Fls. & Frts. : August–January.

Illus. : Patunkar, Grass. Marathw. 28, f. 6. 1980; Matthew, Illus. Fl. Tamilnadu Carnatic 2: tt. 802 & 803. 1982.

Distrib. : Common in all districts.

## APLUDA L.

**Apluda mutica** L. Sp. Pl. 82. 1753; Bor, Grass. Ind. 93. 1960. *A. varia* Back. in DC. Monogr. Phan. 6: 196. 1889; Hook. f. Fl. Brit. India 7: 150. 1896; Cooke, Fl. Pres. Bombay 3: 474. 1958 (Repr. ed.). *A. varia* ssp. *aristata* Hack. op. cit.; Blatt. & McC. Bombay Grass. 29. 1935; Hook. f. op. cit. 151. *A. varia* ssp. *aristata* Hack. var. *ciliata* Hook. f. op. cit. *A. varia* ssp. *aristata* var. *rostrata* Hook. f. op. cit. *A. varia* ssp. *aristata* var. *villosula* Hook. f. op. cit. *A. varia* ssp. *mutica* Hack. op. cit.; Hook. f. op. cit. 150. *A. varia* ssp. *mutica* var. *humilis* Hook. f. op. cit. 'Ghagara', 'Holera', 'Kharwel', 'Phulia', 'Tambat'.

Herbs, annual or perennial, up to 2 m high. Leaves 4.5–30.0 x 0.5–1.5 cm, linear-lanceolate or lanceolate, petioled. Panicles 5–8 cm long. Spikelets 0.7–0.9 cm long, greenish-red or greenish-orange. Grains elliptic-oblong, reddish-brown.

Fls. & Frts. : October–May.

Illus. : Blatt. & McC. op. cit. t. 20; Patunkar, Grass. Marathw. 31, f. 7. 1980; Matthew, Illus. Fl. Tamilnadu Carnatic 2: tt. 804 & 805. 1982.

Distrib. : Common throughout on gravelley soil, along river banks, water courses etc.

## APOCOPIS Nees

1. Inflorescence concealed within the upper most leaf sheath; anthers c 0.1 cm long

... *A. vaginata*

1. Inflorescence 0.2–0.225 cm

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Illus.  
711. 1988.

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1. Inflorescence distinctly exserted; anthers 0.2-0.225 cm long

... *A. mangalorensis*

**Apocopsis mangalorensis** (Hochst.) Henr. in Blumea 4: 523. 1941; Bor, Grass. Ind. 96. 1960. *Amblyachyrum mangalorensis* Hochst. in Flora 39: 26. 1856.

Annuals; culms tall, erect or low, densely tufted. Leaves 2.5-7.5 cm, glabrous or hairy. Inflorescence well exserted. Spikes 1.2-3.7 cm long, slender or stout. Spikelets 0.3-0.5 cm long, yellow with red-brown tips or dark brown with yellowish tips.

*Illus.* : Matthew, Further *Illus.* Fl. Tamilnadu Carnatic 4: tt. 710 & 711. 1988.

*Distrib.* : Bombay (Bor, *op. cit.*).

**A. vaginata** Hack. in Oestr. Bot. Zeit. 41: 8. 1891; Cooke, Fl. Pres. Bombay 3: 485. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 26. 1935; Bor, Grass. Ind. 96. 1960. *A. wightii* Nees ex Thw. var. *vaginata* (Hack.) Hook. f. Fl. Brit. India 7: 143. 1896.

Annuals, low; culms 10-18 cm tall, decumbent, branching from base. Leaves 1.5-6.0 x 0.2-0.5 cm, lanceolate, sparsely ciliate on margins, apex acute to acuminate. Racemes 2-nate, closely appressed together, enclosed in sheath during flowering. Spikelets c 0.5 cm long, oblong, brown. Grains fusiform.

*Fls. & Frts.* : September-December.

*Illus.* : Blatt. & McC. *op. cit.* t. 17; Patunkar, Grass. Marathw. 32, f. 8. 1980.

*Distrib.* : Kolhapur; Nanded; Thane (Cooke, *op. cit.*).

*Notes* : Cooke (*op. cit.*) included this on the authority of Woodrow, though he had not seen any specimen.

#### ARISTIDA L.

1. Lemma and the awns articulated whether it be at the tip or centre of the lemma or at the top of a prolongation (column) :
2. Articulation between the awns and lemma situated at the top of the column, i.e. just below the spreading awns ... *A. mutabilis*
2. Articulation between the tip of the lemma and the base of the column :
3. Glumes extraordinarily unequal; lower glume 2.5-2.8 cm long, upper 0.6 cm long; column covered with short white hairs ... *A. stocksii*

3. Glumes not so unequal, the upper about three quarters the length of the lower or nearly equal; lower glume 2 cm long, the upper 1.5–1.0 cm long; long white sparse hairs often present in axils and on pedicels and also on the leaves at the base
1. Lemma and the awns not articulated : ... *A. funiculata*
4. Lateral awns much reduced and of a different texture from the third awn, sometimes absent altogether ... *A. redacta*
4. Lateral awns well developed, if shorter, than the central awn of the same texture :
5. Panicles effuse, often as broad as long ... *A. hystrix*
5. Panicles contracted :
6. Glumes long-awned, with awns 0.3–0.5 cm long ... *A. setacea*
6. Glumes not long-awned, awns at most 0.2 cm long ... *A. adscensionis*

*Aristida adscensionis* L. Sp. Pl. 82. 1753; Hook. f. Fl. Brit. India 7: 224. 1896; Cooke, Fl. Pres. Bombay 3: 529. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 209. 1935; Bor Grass. Ind. 407. 1960. *A. depressa* Retz. Obs. Bot. 4: 22. 1786; Bor, op. cit. 409. *A. adscensionis* var. *pumila* (Decne.) Coss. & Dur. Fl. d' Alger. Glum. 84. 1855; Bor, op. cit. 'Longi-kasal'.

Herbs, annual or perennial, densely tufted, erect or ascending, 30–120 cm high. Leaves 6–30 x 0.1–0.2 cm, convolute, filiform; ligule of fine hairs. Inflorescence of linear panicles or fascicled spikes, 8–30 cm long. Spikelets 0.5–1.0 cm long, ovoid-oblong or oblong-lanceolate, erect.

Fls. & Frts. : February–April.

Illus. : Blatt. & McC. op. cit. t. 138; Mahesh. Illus. Fl. Delhi f. 271. 1966; W.D. Clayton in Hepper, Fl. W. Trop. Afr. 3(2): 380, f. 427. 1972; Ugemuge, Fl. Nagpur Dt. t. 177. 1986.

Distrib. : Common in all districts.

*A. funiculata* Trin. & Rupr. Sp. Gram. Stip. 159. 1842 & in Mem. Acad. Sci. Petersb. 6, 7: 159. 1843; Hook. f. Fl. Brit. India 7: 226. 1896; Cooke, Fl. Pres. Bombay 3: 531. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 214. 1935; Bor, Grass. Ind. 410. 1960. *A. royleana* Trin. & Rupr. op. cit. 160; Bor, op. cit. 412. *A. funiculata* var. *royleana* (Trin. & Rupr.) Hook. f. op. cit. 227. *A. funiculata* var. *mallica* (Edgew.) Henr. Monogr. *Aristida* 90. 1929; Bor, op. cit. 410. 'Bhuti', 'Pandhrikusal'.

Annuals; culms 20–70 cm tall, erect or geniculate, tufted. Leaves 3–13 x 0.1–0.2 cm, involute or flat, linear, finely acuminate to setaceous

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Illus.

199, f. 60.

713. 1988.

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at apex. Panicles terminal. Spikelets 1.5–2.2 cm long. Grains cylindric, black.

*Fls. & Frts.* : September–December

*Illus.* : Blatt. & McC. *op. cit.* t. 142; Patunkar, Grass. Marathw. 199, f. 60. 1980; Matthew, Further *Illus. Fl. Tamilnadu Carnatic* 4: t. 713. 1988.

*Distrib.* : Common in all districts.

**A. hystrix** L.f. Suppl. Pl. 113. 1781; Hook. f. *Fl. Brit. India* 7: 225. 1896; Cooke, *Fl. Pres. Bombay* 3: 529. 1958 (Repr. ed.); Blatt. & McC. *Bombay Grass*. 211. 1935; Bor, *Grass. Ind.* 410. 1960. 'Kusal', 'Matari'.

Perennials; culms 15–60 cm tall, stiff, stout. Leaves 10–40 x 0.2–0.3 cm long, narrowly linear, convolute, glaucous. Panicles 8–15 cm long; rhachis stout, angular. Spikelets straw coloured. Glumes 1 and 2 membranous, keels smooth, glume 3 smooth; callus naked. Grains cylindric, tightly embraced by lemma.

*Fls. & Frts.* : August–December.

*Illus.* : Blatt. & McC. *op. cit.* t. 140; Matthew, *Illus. Fl. Tamilnadu Carnatic* tt. 806 & 807. 1982.

*Distrib.* : Chandrapur; Dhule; Nagpur; Nanded.

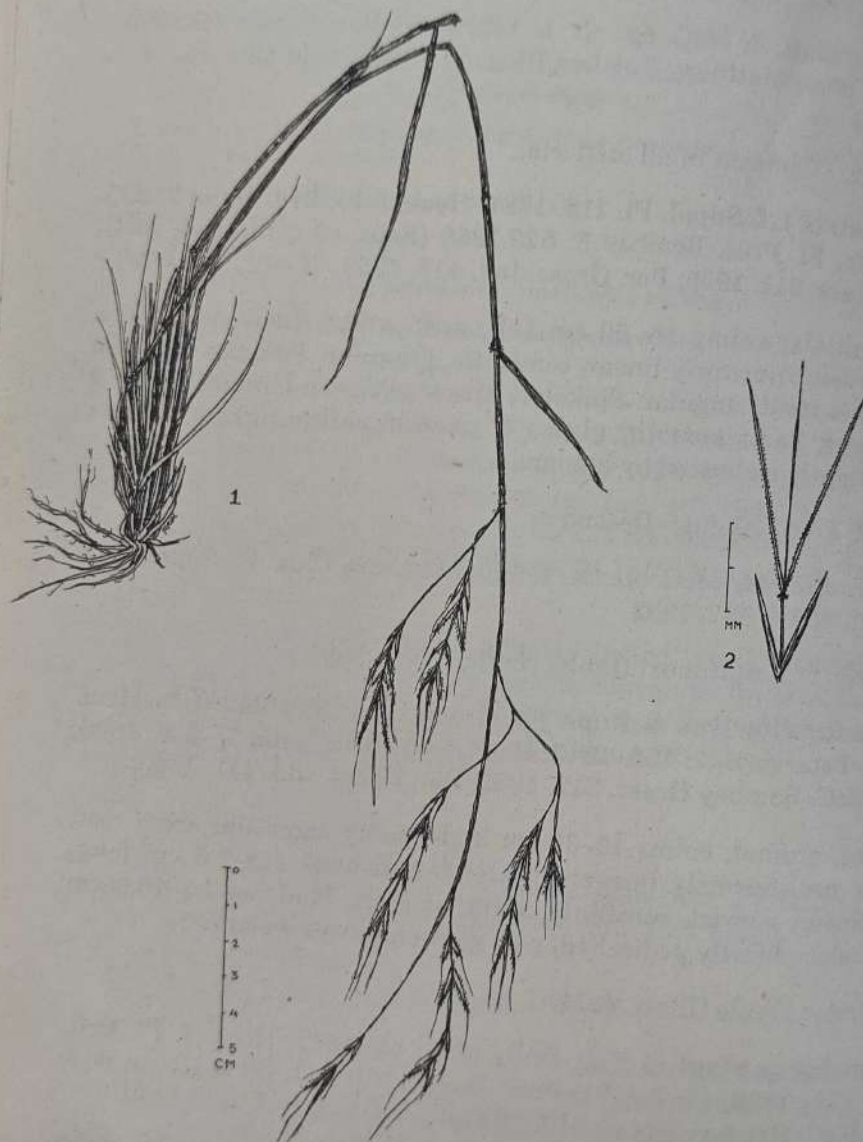
**A. mutabilis** Trin. & Rupr. Sp. Gram. Stip. 150. 1842 & in Mem. Acad. Sci. Petersb. 6, 7: 150. 1843; Hook. f. *Fl. Brit. India* 7: 226. 1896; Blatt. & McC. *Bombay Grass*. 212. 1935; Bor, *Grass. Ind.* 411. 1960.

Herbs, annual; culms 15–30 cm high, many ascending from root, simple or proliferously branched, slender. Leaves 2.5–7.5 cm long, slender, linear, curved, convolute, rigid, smooth. Panicles 7.5–15.0 cm long. Spikelets shortly pedicelled, pale green or straw-coloured.

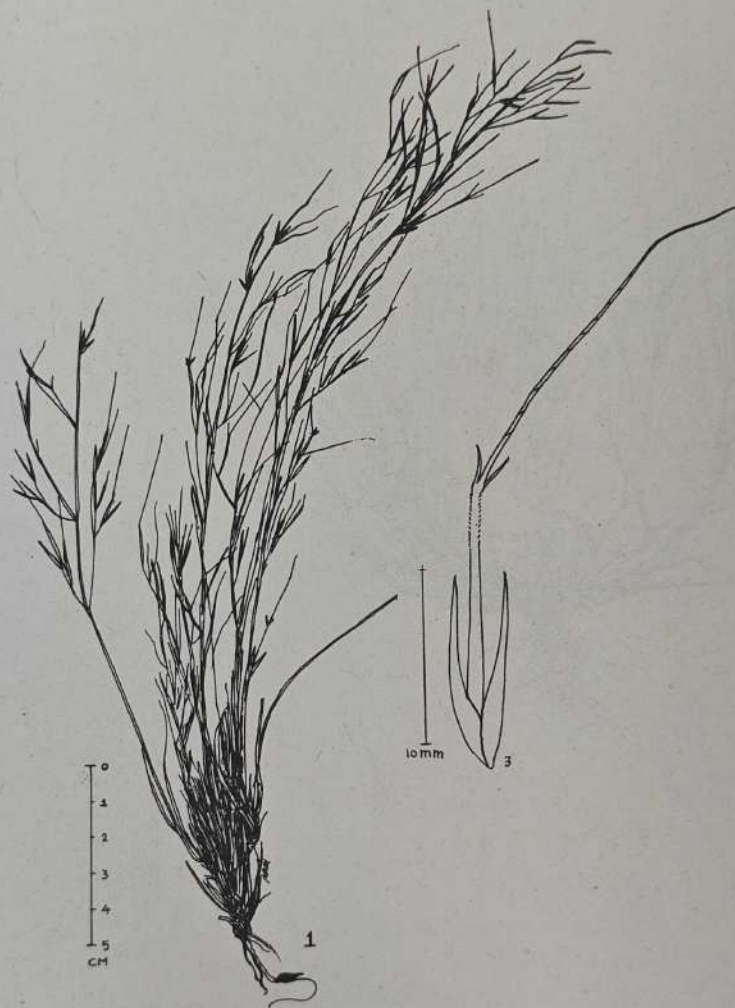
*Distrib.* : Dhule (Blatt. & McC. *op. cit.*).

**A. redacta** Stapf in Kew Bull. 1892: 85. 1892; Hook. f. *Fl. Brit. India* 7: 227. 1896; Cooke, *Fl. Pres. Bombay* 3: 531. 1958 (Repr. ed.); Blatt. & McC. *Bombay Grass*. 215. 1935; Bor, *Grass. Ind.* 412. 1960.

Annuals, 15–30 cm tall; culms tufted, usually simple. Leaves 5–10 cm long, involute, narrowly linear, hairy above, glabrous below. Inflorescence of lax, terminal panicles, open, 6–12 cm long; glumes shortly aristate, lower glume lanceolate, c 0.6 cm long, upper often suppressed; lemma passing into coriaceous, swollen twisted column. Grains cylindric, black.



*Aristida mutabilis* Trin. & Rupr.  
1. Habit 2. Spikelet



*Aristida redacta* Stapf  
1. Habit 2. Spikelet



*Aristida stocksii* Domin  
1. Habit 2. Spikelet

Fls. & Fr

Distrib. :

*A. setacea*  
225. 1896; C  
McC. Bomb  
Kusal'.

Herbs,  
Leaves 10-  
Spikelets 0.

Fls. &

Illus.  
Tamilnad

Dist  
Dhule (B  
op. cit.);

*A.*  
Grass.  
Mahara  
7: 227.

*A.*  
ascend  
linear  
Spike  
long.

Koll

1.

1.

*Fls. & Frts.* : September–October.

*Distrib.* : Common in all districts.

*A. setacea* Retz. Obs. Bot. 4: 22. 1786; Hook. f. Fl. Brit. India 7: 225. 1896; Cooke, Fl. Pres. Bombay 3: 529. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 211. 1935; Bor, Grass. Ind. 412. 1960. '*Mothi-Kusal*'.

Herbs, perennial, tufted, erect or basally geniculately ascending. Leaves 10–20 x 0.2–0.3 cm, convolute. Panicles subsecund, contracted. Spikelets 0.5–0.7 cm long, erect.

*Fls. & Frts.* : September–November.

*Illus.* : Blatt. & McC. *op. cit.* t. 139; Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 714. 1988.

*Distrib.* : Amaravati; Bhandara; Bombay; Buldhana; Chandrapur; Dhule (Blatt. & McC. *op. cit.*); Kolhapur; Nagpur; Nasik; Pune (Cooke, *op. cit.*); Ratnagiri; Sindhudurg; Yavatmal.

*A. stocksii* (Hook. f.) Domin. in Bibl. Bot. Heft 85: 338. 1915; Bor, Grass. Ind. 412. 1960; U. R. Deshpande & N. P. Singh, Grass. Maharashtra 21. 1986. *A. funiculata* var. *stocksii* Hook. f. Fl. Brit. India 7: 227. 1896.

Annuals; culms 20–40 cm tall, tufted, erect or geniculately ascending from base. Leaves 3–15 x 0.15–0.25 cm, involute, narrowly linear, finely acuminate or acute at apex. Panicles lax, 5–10 cm long. Spikelets yellowish or straw-coloured; column of lemma 2.7–4.5 cm long. Grains cylindric.

*Fls. & Frts.* : September–November.

*Distrib.* : Ahmednagar; Akola; Aurangabad; Beed; Buldhana; Kolhapur; Pune; Sangli; Satara.

# ARTHRAXON P. Beauv.

- |  |     |                       |
|--|-----|-----------------------|
| 1. Spikelets long-awned; awn 15–25 cm long   | ... | <i>A. jubatus</i>     |
| 1. Spikelets short-awned or awnless; awn not more than 2.5 cm long   |     |                       |
| 2. Lower glume of sessile spikelet inflexed, pilose, villous or with broad based spicules; pedicelled spikelet well developed, 0.27–0.78 cm long | ... | <i>A. lanceolatus</i> |

2. Lower glume of sessile spikelet flat, marginal nerves with small spicules; pedicelled spikelet absent or reduced or if present then up to 0.32 cm long;
3. Pedicelled spikelets, at least in the upper part of the raceme developed
3. Pedicelled spikelets not developed; pedicels more or less reduced

... *A. lancifolius*... *A. hispidus*

**Arthraxon hispidus** (Thunb.) Makino in Bot. Mag. Tokyo 28: 214. 1912; Bor, Grass. Ind. 99. 1960; Jain in J. Indian Bot. Soc. 51: 173. 1972; Welzen in Blumea 27: 266. 1981. *Phalaris hispida* Thunb. Fl. Jap. 44. 1784. *Arthraxon ciliaris* P. Beauv. Ess. Agrost. 111, 152, t. 11, f. 6. 1812; Hook. f. Fl. Brit. India 7: 145. 1896; Cooke, Fl. Pres. Bombay 3: 489. 1958 (Repr. ed.). *A. micans* (Nees) Hochst. in Flora 39: 188. 1856; Bor, op. cit. 101. *A. nudus* (Steud.) Hochst. op. cit.; Bor, op. cit. Jain op. cit. 178. *A. submuticus* (Nees ex Steud.) Hochst. op. cit.; Hook. f. op. cit. 144; Bor, op. cit. 102. *A. brevistaratus* Hack. in DC. Monogr. Phan. 6: 350. 1889; Hook. f. op. cit.; Bor, op. cit. 99. *A. inermis* Hook. f. op. cit. 145; Blatt. & McC. Bombay Grass. 74. 1935; Cooke, op. cit. 487; Bor, op. cit. 100. *A. quartinianus* (A. Rich.) Nash in N. Amer. Flora 17: 99. 1912; Blatt. & McC. op. cit. 78. p.p.; Bor, op. cit. 102; Jain, op. cit. 179. *A. hookeri* (Hack.) Henr. in Blumea 4: 526. 1941; Bor, op. cit. 99; Jain, op. cit. *A. nitidulus* Stapf ex Bor, op. cit. 101; Jain, op. cit. 178. *A. satarensis* Almeida in J. Bombay nat. Hist. Soc. 66: 515. 1970 emend. Deshpande & Hemadri in Bull. Bot. Surv. India 12: 274. 1970; Jain, op. cit. 181. *A. inermis* var. *tzvelevii* Jain in Sci. & Cult. 37: 55. 1971 & in J. Indian Bot. Soc. 51: 174, f. 6. 1972.

1. Sessile spikelets small, ovate-oblong, 0.1–0.18 cm long; lower lemma sometimes absent

... var. *junnarensis*

1. Sessile spikelets large, ovate-lanceolate to ovate-linear-lanceolate, 0.19–0.79 cm long; lower lemma always present:

2. Joints long pilose; lower glume usually densely spiculate

... var. *santapau*

2. Joints glabrous to short pilose; lower glume not as above

... var. *hispidus*

var. **hispidus**. 'Vanguaria', 'Vanguarin'.

Herbs, erect or procumbent, up to 45 cm tall, rooting at lower nodes; culms slender, nodes thickened. Leaves 2–4 x 0.6–1.3 cm, ovate, base cordate, apex acuminate, margins with tubercle-based hairs, also a few on upper and lower surfaces. Racemes 3–6 or sometimes more. Spikelets 0.35–0.4 cm long, greenish to greenish-purple; lower glume scabrid on back, minutely toothed along margins, upper glume hispid at apex. Grains 0.17–2.5 cm long, linear, terete, brown.

Fls. & Frts. : September–November.

FLC

Illus. : Blatt. & M. nitidulus), 174, f. 6. quartinianus).

Distrib. : Common

var. *junnarensis*

1981. *A. junnaensis* 300. 1971 & in J. Indi

Herbs, c 20 cm nodes. Leaves 1.0–2. tubercle based hair glabrous peduncle; s 0.05 cm, solitary, cylindrical.

Fls. & Frts. : S

Illus. : Jain &

Distrib. : Pune

var. *santapau*  
*santapau* Bor in  
Jain in J. Indian B

Herbs up to bulbous based ha 2–3, 2–4 x 0.4–1 0.1–0.11 cm. Low pedicelled spikelet

Illus. : Wel

Distrib. :

Pune.

**A. jubatu**  
Brit. India 7: 1  
Blatt. & McC.  
in J. Indian Bo

Herbs, a pubescent. L hairy. Raceme cm long; lowe Pedicelled spi

*Illus.* : Blatt. & McC. *op. cit.* t. 45; Jain, *op. cit.* 172, f. 4. (*A. nitidulus*), 174, f. 6. (*A. inermis* var. *tzvelevii*) & 177, f. 13. (*A. quartinianus*).

*Distrib.* : Common in all districts.

var. *junnarensis* (Jain & Hemadri) Welzen in *Blumea* 27: 277. 1981. *A. junnarensis* Jain & Hemadri in *J. Bombay nat. Hist. Soc.* 68: 300. 1971 & in *J. Indian Bot. Soc.* 51: 175, f. 16. 1972.

Herbs, c 20 cm long, annual; culms capillary, rooting at lower nodes. Leaves 1.0–2.5 x 0.5–0.75 cm, ovate or ovate-lanceolate with tubercle based hairs. Inflorescence a short panicle borne on long glabrous peduncle; spikes 5–12, 1.0–1.75 cm long. Spikelets 0.15–0.2 x 0.05 cm, solitary, hermaphrodite. Grains c 0.1 cm long, linear or cylindrical.

*Fls. & Frts.* : September–October.

*Illus.* : Jain & Hemadri, *op. cit.*

*Distrib.* : Pune.

var. *santapau* (Bor) Welzen in *Blumea* 27: 280, f. 6. 1981. *A. santapau* Bor in *Kew Bull.* 1951: 446. 1952 & *Grass. Ind.* 102. 1960; Jain in *J. Indian Bot. Soc.* 51: 181. 1972.

Herbs up to 15 cm high. Leaves 1.7–5.3 x 0.4–1.5 cm, margins with bulbous based hairs in the lower half. Peduncles c 0.03 cm long. Spikes 2–3, 2–4 x 0.4–1.8 cm. Sessile spikelets linear-lanceolate, 0.54–0.84 x 0.1–0.11 cm. Lower glume dorsally, usually densely spiculate all over; pedicelled spikelet absent.

*Illus.* : Welzen, *op. cit.*

*Distrib.* : Occasional on floor of monsoon forest. Ahmednagar; Pune.

*A. jubatus* Hack. in *DC. Monogr. Phan.* 6: 358. 1889; Hook. f. *Fl. Brit. India* 7: 147. 1896; Cooke, *Fl. Pres. Bombay* 3: 489. 1958 (Repr. ed.); Blatt. & McC. *Bombay Grass.* 79. 1935; Bor, *Grass. Ind.* 100. 1960; Jain in *J. Indian Bot. Soc.* 51: 174. 1972; Welzen in *Blumea* 27: 280. 1981.

Herbs, annual, slender; culms 10–30 cm long, leafy, terete; nodes pubescent. Leaves 2.25–4.5 x 0.43–0.75 cm, lanceolate, acute, thin, hairy. Racemes enclosed in upper most sheaths. Sessile spikelets c 0.8 cm long; lower glume linear, 2-nerved, upper glume shorter than lower. Pedicelled spikelets c 0.5 cm long.

*Fls. & Frts.* : October–February.

*Illus.* : Blatt. & McC. Bombay Grass, t. 50; Jain, *op. cit.* 172, f. 9.

*Distrib.* : Bombay (Bor, *op. cit.*); Kolhapur; Pune; Raigad; Ratnagiri; Satara; Sindhudurg.

*A. lanceolatus* (Roxb.) Hochst. in Flora 39: 188. 1856; Hook. f. Fl. Brit. India 7: 143. 1896; Cooke, Fl. Pres. Bombay 3: 487. 1958 (Repr. ed.); Bor, Grass. Ind. 100. 1960; Jain in J. Indian Bot. Soc. 51: 175. 1972; Welzen in Blumea 27: 283, f. 8. 1981. *Andropogon lanceolatus* Roxb. Fl. Ind. 1: 262. 1820. *Arthraxon prionodes* (Steud.) Dandy in Andrews, Fl. Pl. Sudan 3: 399. 1956; Bor, *op. cit.* 101; Jain, *op. cit.* 179, f. 19. *A. serrulatus* Hochst. *op. cit. p.p.*; Blatt. & McC. Bombay Grass, 75. 1935. *A. deccanensis* Jain in J. Bombay nat. Hist. Soc. 68: 298. 1971 & in J. Indian Bot. Soc. 51: 171, f. 17. 1972.

1. Marginal nerves of lower glume of sessile spikelets with hairy wings ...
1. Marginal nerves of lower glume of sessile spikelets with broad based spicules : ... var. *villosus*
2. Broad based spicules at least on marginal and submarginal nerves of lower glume of sessile spikelet with at most a single stiff hair :
3. Marginal and submarginal nerves of lower glume of sessile spikelets with broad based spicules ... var. *lanceolatus*
3. All nerves of lower glume of sessile spikelets with broad based spicules ... var. *echinatus*
2. Broad based spicules on marginal and submarginal nerves of lower glume of sessile spikelets with bundles of stiff hairs :
4. Lower glume of sessile spikelets dorsally shortly apiculate, glabrous ... var. *meeboldii*
4. Lower glume of sessile spikelets dorsally densely pilose ... var. *raizadæ*

var. *lanceolatus*, 'Govinder', 'Harjala', 'Sipla'.

Herbs, annual; culms tufted, 15–100 cm tall. Leaves 0.5–2.5 x 0.4–1.2 cm, ovate–lanceolate, sparsely hairy with bulbous based hairs, margins ciliate. Racemes 1–5, 3–5 cm long. Sessile spikelet 0.55–0.63 cm long, linear–lanceolate, strongly 2-keeled; pedicelled spikelet 0.4–0.45 cm long, linear–lanceolate. Grains c 0.3 cm long, terete.

*Fls. & Frts.* : September–January.

*Illus.* : Jain, *op. cit.*; Patunkar, Grass. Marathw. 37, f. 9. 1980 (*Arthraxon prionodes*); Welzen, *op. cit.*

*Distrib.*

var. *ect*  
Welzen in B  
Edinb. New  
in Flora 39:  
Soc. 51: 173.

Herbs.  
puberulous  
Racemes 2-  
lower glum  
spikelets 0.

*Fls. &*

*Illus.*

*Distri*

var. *meeboldii*  
3: 488. 19  
Grass. Ind  
purandha  
Bor, *op. ci*

Ann  
rooting at  
hairy on l  
long; ped

*Fls.*

*Illu*

*Dis*  
Pune; Ra

var  
*raizadæ*  
*cit.* 180,

An  
lower n  
sparsely  
amplex  
long; rh  
lower g

*Distrib.* : Common in all districts.

var. *echinatus* (Nees) Hack. in DC. Monogr. Phan. 6: 348. 1889; Welzen in Blumea 27: 285. 1981. *Bathratherum echinatum* Nees in Edinb. New Phil. J. 18: 181. 1835. *Arthraxon echinatus* (Nees) Hochst. in Flora 39: 188. 1856; Bor, Grass. Ind. 99. 1960; Jain in J. Indian Bot. Soc. 51: 173. 1972. *A. spathaceus* Hook. f. Fl. Brit. India 7: 145. 1897.

Herbs, perennial; culms simple, 20–50 cm tall, glabrous or puberulous. Leaves 1.5–3.5 x 0.5–1.2 cm, ovate-lanceolate, hairy. Racemes 2–4, 2.5–4.0 cm long. Sessile spikelets 0.45–0.55 cm long; lower glumes 5–7-nerved, upper glume faintly 3–5-nerved. Pedicelled spikelets 0.4–0.45 cm long, linear-lanceolate.

*Fls. & Frts.* : September–December.

*Illus.* : Welzen, *op. cit.* 286, f.9.

*Distrib.* : Aurangabad; Chandrapur; Kolhapur; Satara.

var. *meeboldii* (Stapf) Welzen in Blumea 27: 285. 1981. *A. meeboldii* Stapf in Kew Bull. 1908: 449. 1908; Cooke, Fl. Pres. Bombay 3: 488. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 76. 1935; Bor, Grass. Ind. 101. 1960; Jain in J. Indian Bot. Soc. 51: 176. 1972. *A. purandharensis* Bharucha in J. Bombay nat. Hist. Soc. 52: 481. 1954; Bor, *op. cit.* 102; Jain, *op. cit.* 179.

Annuals; culms 2–3 from the base, erect up to 35 cm high often rooting at lower nodes. Leaves 1.5–5.0 x 1.0–1.5 cm, ovate-lanceolate, hairy on both sides. Spikes up to 5 cm long. Sessile spikelets 0.7–0.8 cm long; pedicelled 0.3–0.4 cm long. Grains terete, brown.

*Fls. & Frts.* : September–October.

*Illus.* : Bharucha, *op. cit.* f. facing page 482; Jain, *op. cit.* 177, f. 23.

*Distrib.* : Ahmednagar; Bombay (Bor, *op. cit.*); Kolhapur; Nasik; Pune; Raigad; Ratnagiri; Satara; Sindhudurg.

var. *raizadae* (Jain *et al.*) Welzen in Blumea 27: 287. 1981. *A. raizadae* Jain *et al.* in J. Indian Bot. Soc. 51: 103, f. 6–9. 1972; Jain, *op. cit.* 180, f. 21.

Annuals, procumbent–ascending; culms up to 35 cm tall, rooting at lower nodes. Leaves 1.2–3.0 x 0.6–1.2 cm, ovate to ovate-lanceolate, sparsely bulbous-based hairy on both sides and along margins, base amplexicaul to cordate. Racemes 2–4, sometimes solitary, up to 4 cm long; rhachis joint densely hairy; sessile spikelets dorsally compressed; lower glume 0.5–0.65 cm long, densely woolly on back with silky shaggy

hairs, keel prominently toothed in the upper half, upper glume keeled, shorter than lower glume; pedicelled spikelets c 0.45 cm long, dorsally compressed.

*Fls. & Frts.* : September–October.

*Illus.* : Jain *et al. op. cit.*; Jain, *op. cit.*

*Distrib.* : Aurangabad; Ratnagiri; Satara; Sindhudurg.

var. *villosus* (C. E. C. Fischer) Welzen in *Blumea* 27: 288. 1981. *A. villosus* C. E. C. Fischer in *Kew Bull.* 1933: 350. 1933; Bor, *Grass.* Ind. 103. 1960; Jain in *J. Indian Bot. Soc.* 51: 182, f. 22. 1972.

Annuals; culms slender, branched. Leaf-sheaths lax, ribbed. Leaves elliptic-ovate or ovate-lanceolate, 2–4 cm long, bulbous hairy. Inflorescence of 2, 2–3 cm long, digitate spikes; lower glume 7-nerved, dorsally densely villose, marginal nerves winged, their edges with numerous patent stiff hairs; anthers 3, c 0.13 x 0.03 cm; pedicelled spikelets 0.4–0.5 cm long, neuter.

*Fls. & Frts.* : October.

*Illus.* : Jain, *op. cit.*

*Distrib.* : Ahmednagar; Raigad; Satara.

*A. lancifolius* (Trin.) Hochst. in *Flora* 39: 188. 1856; Bor, *Grass.* Ind. 100. 1960; Jain in *J. Indian Bot. Soc.* 51: 176. 1972; Welzen in *Blumea* 27: 288. 1981. *Andropogon lancifolius* Trin. in *Mem. Acad. Sci. Petersb.* 6, 2: 271. 1832. *Arthraxon microphyllus sensu* Hook. f. *Fl. Brit. India* 7: 147. 1896 *p.p. non* (Trin.) Hochst. 1856; Cooke, *Fl. Pres. Bombay* 3: 488. 1958 (Repr. ed.). *A. lancifolius* var. *hindustanicus* Jain & Deshpande in *J. Indian Bot. Soc.* 51: 176. 1972. *A. microphyllus* Trin. var. *hindustanicus* (Jain & Deshpande) S.M. & M.R. Almeida in *Bombay nat. Hist. Soc.* 82: 445. 1985. '*Faradyachne gavat*', '*Turda*'.

Herbs, annual, slender up to 60 cm high, tufted or rooting at lower nodes. Leaves 1.5–4.0 x 0.5–1.0 cm, ovate-lanceolate, acuminate with few tubercled hairs above and below, base slightly auricled, margins hairy towards base. Spikes 2–6. Sessile spikelets 0.2–0.4 cm long, linear, callus hairy; pedicelled c 0.2 cm long, lanceolate. Grains terete, brown.

*Fls. & Frts.* : August–December.

*Illus.* : Blatt. & McC. *op. cit.*; Jain, *op. cit.* 173, f.7.

*Distrib.* : Common in all districts.

1. Inflorescence cylind  
2–5 cm long

1. Inflorescence not at  
racemes of spikelet

2. Upper lemma  
awn, at the ti

3. Perenni

3. Annual

4. W

sp

4. P

lo

P

s

2. Upper lem

5. Uppe

than

5. Upp

6.

6.

Arun

Nederl. In

Roxb. Fl.

India 7: 7

(Repr. ed.)

Her

cm, line

FLORA OF MAHARASHTRA STATE

ARUNDINELLA Raddi

403

1. Inflorescence cylindric, densely spicate, 0.75–1.0 cm wide, 2–5 cm long ... *A. spicata*
1. Inflorescence not at all spicate, either a dense panicle of racemes of spikelets or in ample or contracted panicles : ...
2. Upper lemma with two setae, one on each side of the awn, at the tip : ...
3. Perennials ... *A. setosa*
3. Annuals : ...
4. Whole plant covered with tubercle-based hairs; spikelets long, acuminate, 0.75–0.95 cm long ... *A. tuberculata*
4. Plants not as above; spikelets at most 0.5–0.6 cm long and often supported by bristles at tip of pedicels, but upper glume even more acuminate; size of panicle variable ... *A. nervosa*
2. Upper lemma with a single awn or awn absent : ...
5. Upper lemma not awned or if so, awn not more than 0.2 cm long; base of upper lemma naked ... *A. leptochloa*
5. Upper lemma bearing a geniculate awn : ...
6. Spikelets small, not more than 0.2 cm long; leaf-blades elliptic-acuminate, membranous to chartaceous, 3–25 cm long, 0.5–2.5 cm wide ... *A. pumila*
6. Spikelets well over 0.2 cm long; leaves not as above : ...
7. Panicles effuse : ...
8. Annual, delicate grass ... *A. metzii*
8. Perennial, stout grass ... *A. nepalensis*
7. Panicles usually contracted or compact : ...
9. Spikelets glabrous or with a few short hairs on keels of glumes ... *A. purpurea*
9. Spikelets bristly from tubercle-based hairs on nerves of glumes and/or in the interspaces, or at least bases of bristles remaining ... *A. ciliata*

**Arundinella ciliata** (Roxb.) Nees ex Miq. in Verh. Konink. Nederl. Inst. 3 (4): 30. 1851; Bor, Grass. Ind. 421. 1960. *Holcus ciliatus* Roxb. Fl. Ind. 1:321. 1820. *Arundinella agrostoides* Hook. f. Fl. Brit. India 7: 71. 1896 non Trin. 1836; Cooke, Fl. Pres. Bombay 3: 523. 1958 (Repr. ed.). *A. agrostoides* var. *ciliata* (Roxb.) Hook. f. op. cit.

Herbs, erect; culms 8–20 cm tall, tufted. Leaves 2.5–10.0 x 0.6–1.2 cm, linear, hairy. Panicles ovoid or oblong, 3–10 cm long. Spikelets

*Arundinella metzii* Miq.

0.25–0.35 cm long  
exceeding lower lemma

*Fls. & Frts.* : S

*Illus.* : Rama  
1976; Matthew, Ill

*Distrib.* : Oc  
Satara; Sindhud

**A. leptochl**

Bor, Grass. Ind.  
Glum. 1: 62. 185  
Fl. 293. 1861; F  
(Repr. ed.); Blat  
op. cit.

Perennials  
2.2–3.5 cm, lin  
10–15 cm long  
Spikelets 0.2  
scaberulous or  
acuminate; low

*Fls. & Fr*

*Illus.* : B

*Distrib.*  
Satara; Sindh

**A. met**

1851; Hook.  
523. 1958 (F  
Kew Bull. 1  
op. cit.; Cool  
Trim. Hand  
op. cit. 195.

Herbs  
Leaves 20-  
decompos  
purple. Gr

*Fls. &*

*Illu*  
Lakshmin

0.25–0.35 cm long, crowded, lanceolate; lower glume considerably exceeding lower lemma, upper lemma 0.1–0.15 cm long, scaberulous.

*Fls. & Frts.* : September–December

*Illus.* : Ramam. in Sald. & Nicols. Fl. Hassan Dt. 702, f. 111C. 1976; Matthew, *Illus. Fl. Tamilnadu Carnatic* 2: tt. 810 & 811. 1982.

*Distrib.* : Occasional in grasslands. Kolhapur; Pune; Ratnagiri; Satara; Sindhudurg; Thane.

**A. leptochloa** (Nees ex Steud.) Hook. f. Fl. Brit. India 7: 76. 1896; Bor, Grass. Ind. 423. 1960. *Panicum leptochloa* Nees ex Steud. Syn. Pl. Glum. 1: 62. 1854. *Arundinella gigantea* Dalz. in Dalz. & Gibs. Bombay Fl. 293. 1861; Hook. f. *op. cit.*; Cooke, Fl. Pres. Bombay 3: 525. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 197. 1935. *A. lawsoni* Hook. f. *op. cit.*

Perennials; culms slender, 40–80 cm tall, smooth. Leaves 8–30 x 2.2–3.5 cm, linear-lanceolate, hairy or glabrous. Panicles terminal, 10–15 cm long, dull purple, branches and axis of panicles scabrid. Spikelets 0.22–0.37 cm long; lower glume ovate, c 0.2 cm long, scaberulous on keel; upper glumes 0.2–0.3 cm long, narrowly ovate, acuminate; lower lemma ovate; upper lemma elliptic, hyaline.

*Fls. & Frts.* : October–June.

*Illus.* : Blatt. & McC. *op. cit.* t. 130.

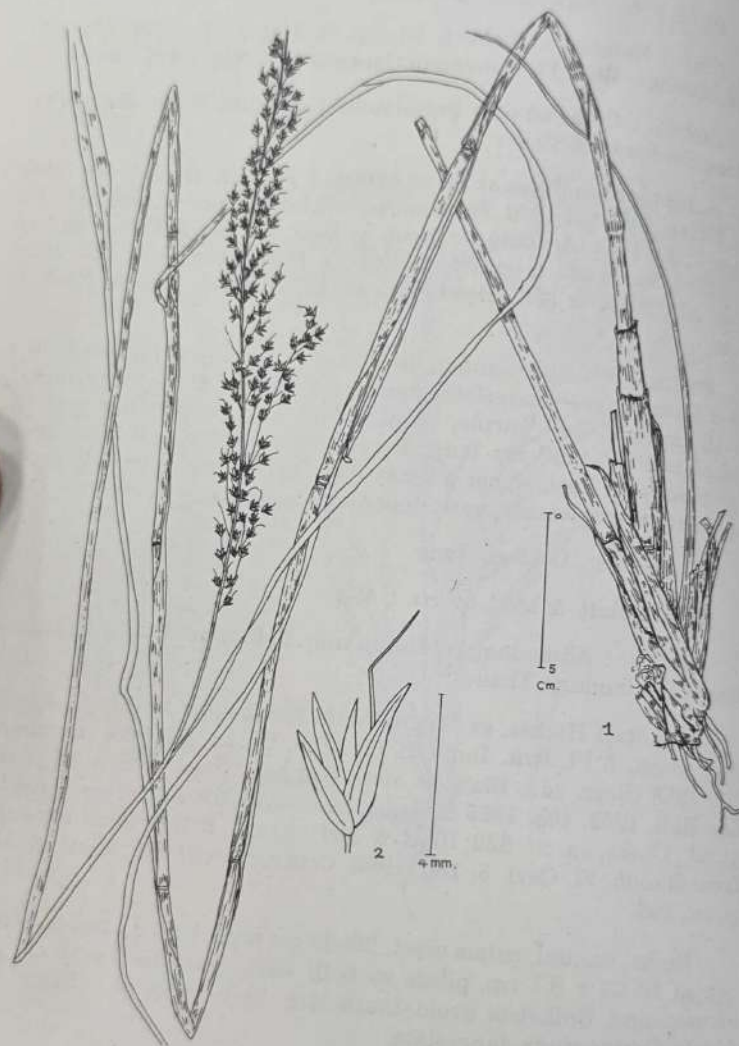
*Distrib.* : Ahmednagar; Buldhana; Kolhapur; Pune; Ratnagiri; Satara; Sindhudurg; Thane.

**A. metzii** Hochst. ex Miq. in Verh. Konink. Nederl. Inst. 3(4): 31. 1851; Hook. f. Fl. Brit. India 7: 72. 1896; Cooke, Fl. Pres. Bombay 3: 523. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 195. 1935; Bor in Kew Bull. 1955: 408. 1955 & Grass. Ind. 423. 1960. *A. pygmaea* Hook. f. *op. cit.*; Cooke, *op. cit.* 522; Blatt. & McC. *op. cit.* 194. *A. lawii* Hook. f. in Trim. Handb. Fl. Ceyl. 5: 180. 1900; Cooke, *op. cit.* 523; Blatt. & McC. *op. cit.* 195.

Herbs, annual; culms erect, 30–60 cm high, tufted, terete, striate. Leaves 20–23 x 0.1 cm, pilose on both sides. Panicles 14–18 cm long, decompound. Spikelets ovoid-lanceolate, hairy, pale or suffused with purple. Grains ovate-lanceolate.

*Fls. & Frts.* : October–December.

*Illus.* : Sreek. & Nair, Fl. Kerala Grass. 340, t. 68. 1991; Lakshminarasimhan & Sharma, Fl. Nasik Dt. 535, f. 48. 1991.



*Arundinella nepalensis* Trin.  
1. Habit 2. Spikelet

Distrib. :  
Pune; Raigad;

*A. nepalensis*  
1836; Bor, Gr  
t. 1, f. 3. 182  
*hispida* Blatt

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Distrib.

*A. nepalensis*  
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*Distrib.* : Ahmednagar; Aurangabad; Bombay; Kolhapur; Nasik; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

**A. nepalensis** Trin. Gram. Panic. 62. 1826 & Sp. Gram. 3, t. 1268. 1836; Bor, Grass. Ind. 423. 1960. *A. brasiliensis* Raddi, Agrost. Bras. 37, t. 1, f. 3. 1823; Cooke, Fl. Pres. Bombay 3: 524. 1958 (Repr. ed.). *A. hispida* Blatt. & McC. Bombay Grass. 195. 1935 non O. Ktze.

Perennials, 1.0–1.5 m tall; culms stout, with hard rootstock, nodes hairy or glabrous. Leaves 10–25 x 0.4–1.0 cm, linear-lanceolate, hairy. Panicles pyramidal, 10–16 cm long, effuse, rhachis glabrous; spikelets 0.4–0.5 cm long, ovate-lanceolate, glabrous; lower glumes c 0.3 cm long, ovate, ribs scabrid, upper glumes c 0.5 cm long, ovate-lanceolate; lower lemma obtuse, bifid at apex.

*Fls. & Frts.* : October–November.

*Distrib.* : Kolhapur; Pune; Ratnagiri; Satara; Sindhudurg.

**A. nervosa** (Roxb.) Nees ex Hook. & Arn. Bot. Beechey Voy. 237. 1836; Hook. f. Fl. Brit. India 7: 71. 1896; Bor, Grass. Ind. 424. 1960. *Holcus nervosus* Roxb. Fl. Ind. 1: 320. 1820.

Annuals; culms 11–35 cm tall. Leaves and sheaths covered with patent, bulbous-based hairs. Inflorescence of panicles. Spikelets 0.5–0.6 cm long supported by bristles at tip of pedicel; upper glume acuminate; upper lemma with two setae, one on each side of awn at tip.

*Fls. & Frts.* : October.

*Distrib.* : Rare along coasts. Bombay (Bor, *op. cit.*); Ratnagiri.

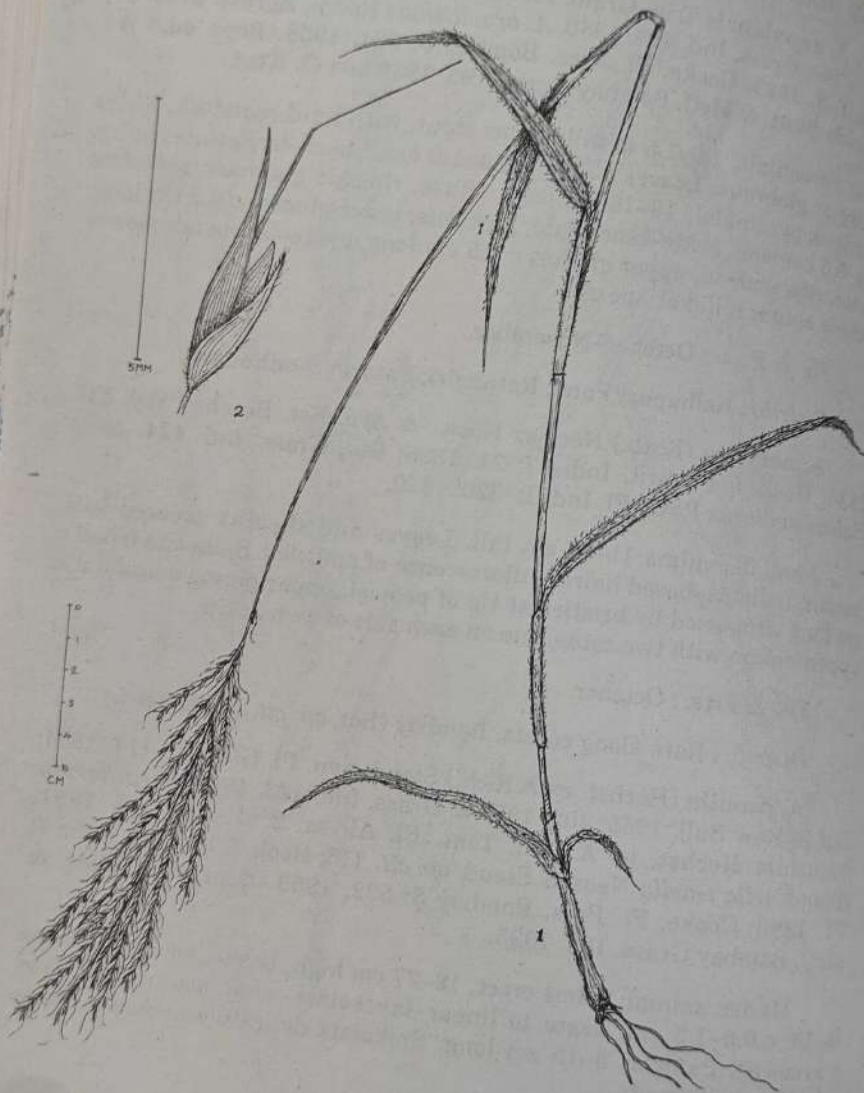
**A. pumila** (Hochst. ex A. Rich.) Steud. Syn. Pl. Glum. 1: 114. 1854; Bor in Kew Bull. 1955: 402. 1955 & Grass. Ind. 423. 1960. *Acratherum pumilum* Hochst. ex A. Rich. Tent. Fl. Abyss. 2: 414, t. 100. 1851. *Arundinella tenella* Nees ex Steud. *op. cit.* 115; Hook. f. Fl. Brit. India 7: 71. 1896; Cooke, Fl. Pres. Bombay 3: 522. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 193. 1935.

Herbs, annual; culms erect, 12–27 cm high, terete, smooth. Leaves 3–13 x 0.5–1.5 cm, ovate to linear-lanceolate, apex acuminate, base narrowed. Panicles 6–15 cm long. Spikelets delicately awned. Grains small, subellipsoid.

*Fls. & Frts.* : September–November.

*Illus.* : Blatt. & McC. *op. cit.* t. 127; Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 718. 1988.

*Distrib.* : Common in all districts.



*Arundinella nervosa* Hook. & Arn.  
1. Habit 2. Spikelet

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3: 52  
Grass

*A. purpurea* Hochst. ex Steud. Syn. Pl. Glum. 1: 115. 1854; Bor, Grass. Ind. 424. 1960; U. R. Deshpande & N. P. Singh, Grass. Maharashtra 28. 1986. *A. fusca* Hook. f. Fl. Brit. India 7: 74. 1896 non Nees ex Buese, 1854.

Herbs, tufted, 0.5–1.5 m tall. Leaves linear-lanceolate, glabrous or sparsely hairy, base cordate, yellowish on drying. Inflorescence 15–20 cm long; spikelets 0.3–0.32 cm long, ovate-elliptic; lower glume ovate-elliptic, 3-nerved, nerves scabrous in upper half, upper glume much longer than lower, 3–5-nerved, nerves scabrous.

*Fls. & Frts.* : October.

*Distrib.* : Kolhapur; Ratnagiri.

*A. setosa* Trin. Gram. Panic. 63. 1826; Hook. f. Fl. Brit. India 7: 70. 1896; Cooke, Fl. Pres. Bombay 3: 521. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 192. 1935; Bor, Grass. Ind. 424. 1960. *A. capillaris* Hook. f. *op.cit.* 74; Cooke, *op.cit.* 525. 'Kotir'.

Perennials; culms 30–100 cm high, densely tufted. Leaves 15–30 x 0.33–0.6 cm, linear, finely acuminate, convolute, narrow; ligule small. Panicles 5–15 cm long; branches laxly many-fid. Spikelets often in pairs, pedicels with a few hairs near tip.

*Fls. & Frts.* : June–September.

*Illus.* : Blatt. & McC. *op.cit.* t. 126; Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: tt. 719 & 720. 1988.

*Distrib.* : Bombay; Nagpur; Osmanabad; Raigad; Satara.

*A. spicata* Dalz. in Dalz. & Gibs. Bombay Fl. 293. 1861; Hook. f. Fl. Brit. India 7: 77. 1896; Cooke, Fl. Pres. Bombay 3: 525. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 197. 1935; Bor, Grass. Ind. 425. 1960. 'Benel', 'Kotir'.

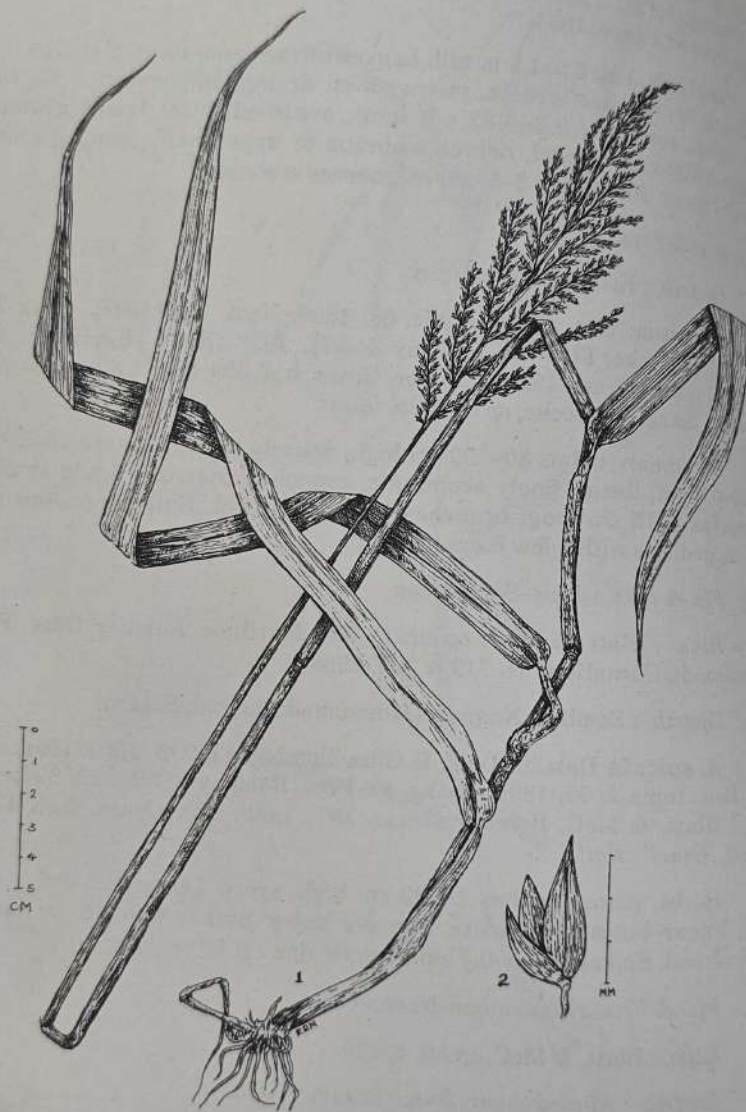
Herbs, annual; culms 15–30 cm high, erect. Leaves 2.5–3.7 x 0.6 cm, linear-lanceolate, acute, densely hairy. Spikes 0.8–3.0 cm long, cylindrical. Spikelets 0.5–0.7 cm long. Grains c 0.13 cm long.

*Fls. & Frts.* : September–November.

*Illus.* : Blatt. & McC. *op.cit.* t. 129.

*Distrib.* : Ahmednagar; Pune; Satara; Thane.

*A. tuberculata* Munro ex Lisboa in J. Bombay nat. Hist. Soc. 5: 344. 1891; Hook. f. Fl. Brit. India 7: 69. 1896; Cooke, Fl. Pres. Bombay 3: 521. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 192. 1935; Bor, Grass. Ind. 425. 1960.



*Arundinella purpurea* Hochst. ex Steud.  
1. Habit 2. Spikelet

Herbs, annual;  
with densely tuberous  
linear-lanceolate,  
Spikelets 0.7-0.9 cm

Fls. & Frts. : S

Illus. : Blatt.  
208, f. 63. 1980.

Distrib. : Aur  
Osmanabad; Parb

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1896; Cooke, Fl.  
Bombay Grass.  
kanda'.

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Illus. : I  
Matthew, Illu

Distrib  
Nagpur; Pur

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ed. 3, 532.  
*ludoviciana*  
434. 1960.

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membran  
scaberulo  
culms. Sp  
long-ped  
tips.

Herbs, annual; culms 30–45 cm high, erect or slightly decumbent with densely tubercle based bristles. Leaves 2.5–11.0 x 0.5–0.9 cm, linear-lanceolate, densely hispid, acute at apex. Panicles linear. Spikelets 0.7–0.9 cm long. Grains c 0.2 cm long, ovate-lanceolate.

*Fls. & Frts.* : September–November.

*Illus.* : Blatt. & McC. *op. cit.* t. 125; Patunkar, Grass. Marathw. 208, f. 63. 1980.

*Distrib.* : Aurangabad; Kolhapur; Konkan (Cooke, *op. cit.*); Nanded; Osmanabad; Parbhani; Pune; Satara; Sholapur.

#### ARUNDO L.

*Arundo donax* L. Sp. Pl. 81.1753; Hook. f. Fl. Brit. India 7: 302. 1896; Cooke, Fl. Pres. Bombay 3: 574. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 204. 1935; Bor, Grass. Ind. 413, f. 44. 1960. '*Devkanda*'.

Herbs, 1.2–3.0 m high, perennial. Leaves 30–50 x 2.5–6.0 cm, lanceolate, base amplexicaul, apex acuminate. Panicles large, decompound, 30–45 cm long. Spikelets c 1.5 cm long, laterally compressed, lanceolate. Grains oblong.

*Fls. & Frts.* : September–June.

*Illus.* : Bor, *op. cit.*; Patunkar, Grass. Marathw. 202, f. 61. 1980; Matthew, *Illus. Fl. Tamilnadu Carnatic* 4: tt. 812 & 813. 1988.

*Distrib.* : Ahmednagar; Aurangabad; Bhandara; Kolhapur; Nagpur; Pune; Raigad; Satara; Sindhudurg; Thane.

#### AVENA L.

*Avena sterilis* L. ssp. *ludoviciana* (Dur.) Gill. & Magne, Fl. Fr. ed. 3, 532. 1875; T.A. Cope in Nasir & Ali, Fl. Pak. 143: 509. 1982. *A. ludoviciana* Dur. in Bull. Soc. Linn. Bord. 20: 41. 1855; Bor, Grass. Ind. 434. 1960.

Annual herbs, 15–30 cm high, erect or ascending from base, simple. Sheaths compressed or obscurely keeled, 2.5–9.0 cm long; ligule membranous. Leaves linear-lanceolate, 10–25 x 0.3–0.7 cm, margins scaberulous, apex acute. Panicles contracted, 3–12 cm long, terminating culms. Spikelets herbaceous, 2–4-flowered, 2-nate, one short, the other long-pedicelled, ovate-lanceolate, 1.8–2.2 cm long. Grains villous except tips.

*Fls. & Frts.* : September–March.

*Illus.* : Patunkar, Grass. Marathw. 210, f. 64. 1980 (A. ludoviciana).

*Distrib.* : Aurangabad; Osmanabad.

### CULTIVATED SPECIES :

*A. sativa* L. Sp. Pl. 79. 1753; Hook. f. Fl. Brit. India 7: 275. 1896; Cooke, Fl. Pres. Bombay 3: 574. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 199. 1935; Bor, Grass. Ind. 434. 1960. 'Jai'.

Annuals; culms up to 1.2 m high, erect, tufted, smooth. Leaves up to 30.0 x 1.2 cm, flat, scabrous; ligule membranous; sheaths smooth, striate. Panicles open or more or less contracted, erect or nodding, sometimes 1-sided. Spikelets 2.0–2.5 cm long, large, drooping.

*Distrib.* : Cultivated. Aurangabad; Kolhapur; Parbhani; Ratnagiri; Sangli; Satara; Sindhudurg.

*Notes* : The common Oat, so well known and largely used as food for horses in Europe, is rarely cultivated in the Bombay Presidency (Cooke, *op. cit.*).

### BAMBUSA Schreb. (*nom. cons.*)

1. Culms spinous

1. Culms not spinous

... *B. arundinacea*

... *B. glaucescens*

***Bambusa arundinacea* (Retz.) Willd. Sp. Pl. 2: 245. 1799;** Gamble in Hook. f. Fl. Brit. India 7: 395. 1896 & Ann. Roy. Bot. Gard. Calcutta 7: 51. 1896; Cooke, Fl. Pres. Bombay 3: 569. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 283. 1935; Holtt. in Gard. Bull. Singapore 16: 59. 1958. *Bambos arundinacea* Retz. Obs. Bot. 5: 24. 1789. 'Kalak', 'Kaset', 'Kashti'.

Culms tall, up to 25 m, branching from all nodes from base upwards. Leaves 17.5–20.0 x 2.5 cm, linear or linear-lanceolate, apex stiff, base rounded, ciliate. Inflorescence of enormous, leafless, compound panicles. Spikelets 1.2–2.5 x 0.5 cm, lanceolate. Caryopsis oblong, beaked by style bases, grooved on one side.

*Fls. & Frts.* : Once in life time (100 years) often during September–May.

*Illus.* : Gamble in Ann. Roy. Bot. Gard. Calcutta 7: t. 48. 1896; Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: tt. 721 & 722. 1988.

*Distrib.* : Ahmednagar; Amaravati; Bombay; Dhule; Kolhapur; Nagpur; Nasik; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane. Occasionally introduced in gardens also.

**B. glaucescens** (Willd.) Sieb. ex Munro in Trans. Linn. Soc. 26: 89. 1868; Holtt. in Kew Bull. 2: 207. 1956 & Gard. Bull. Singapore 16: 67. 1958. *Ludolfia glaucescens* Willd. in Ges. Nat. Fr. Berl. Mag. 2: 320. 1808. *Bambusa nana* Roxb. Fl. Ind. 2: 199. 1820 (*nom. subnud.*); Gamble in Hook. f. Fl. Brit. India 7: 390. 1896; Cooke, Fl. Pres. Bombay 3: 570. 1958 (Repr. ed.). 'Bambu', 'Barik'.

Culms 2-3 m tall, densely tufted; empty sheaths linear. Leaves linear-lanceolate, glabrous or appressed hairy above, sheath ending in prominent callus. Panicles short; spikelets 1.6-3.5 cm long, solitary or few, clustered, straw coloured; glumes 5 or more; lemmas ovate-lanceolate, keels minutely ciliate near tip; paleas many nerved. Grains elliptic, shortly beaked.

*Fls. & Frts.* : February.

*Distrib.* : Kolhapur.

#### CULTIVATED SPECIES :

**B. vulgaris** Schrad. in Wendl. Collect. Pl. 2: 26, t. 47. 1810; Gamble in Hook. f. Fl. Brit. India 7: 391. 1896; Cooke, Fl. Pres. Bombay 3: 570. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 282. 1935; Holtt. in Gard. Bull. Singapore 16: 63. 1958. 'Udha-bans'.

Culms woody, 5-15 m tall, green, yellow or striped, nodes with a hairy ring. Leaves linear-lanceolate, 6-8-nerved, appressed hairy on both sides. Panicles large, leafy; spikelets 1.5-2.1 cm long; lemmas 6-10; paleas as long as glumes; keels white-ciliate.

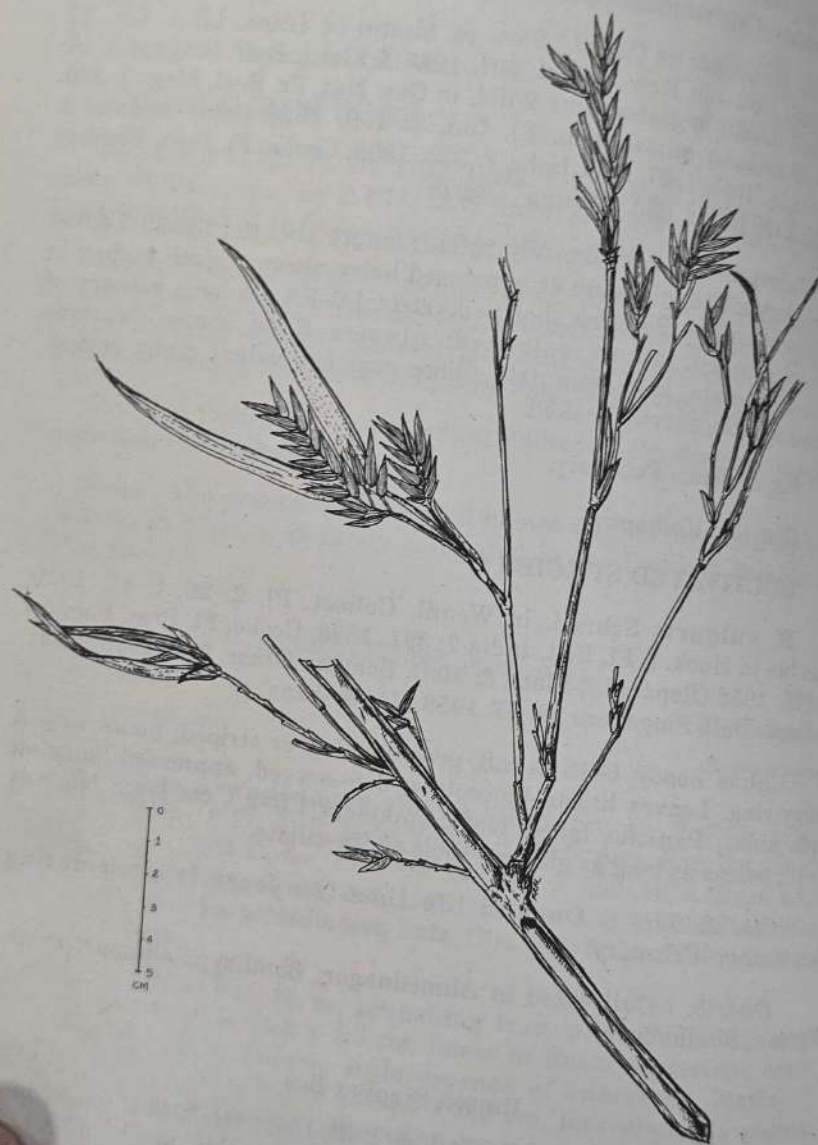
*Fls. & Frts.* : Once in life time (20 years ?) often during September-February.

*Distrib.* : Cultivated in Ahmednagar; Bombay; Kolhapur; Pune; Satara; Sindhudurg.

#### BHIDEA Stapf ex Bor

**Bhidea burnsiana** Bor in Kew Bull. 1948: 445. 1949 & Grass. Ind. 103. 1960; U. R. Deshapande & N. P. Singh, Grass. Maharashtra 30, t. 4. 1986.

Annuals, 8-15 cm tall, tufted; culms slender, nodes hairy. Leaves 3-6 cm long, narrowly linear-lanceolate, margin bulbous-based hairy.



*Bambusa glaucescens* (Willd.) Sieb. ex Munro

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Racemes 1-3, 2-3 cm long; sessile spikelet 0.5-0.8 cm long (excluding awn) geniculate, flat or depressed, winged in upper half, wing obliquely ovate; upper glume 0.4-0.6 cm long, rounded, tip forked, with 2 long projections; pedicels hairy on one side; pedicelled spikelet ovate-lanceolate; lower glume 0.5-0.6 cm long, obliquely winged, upper glume linear, longer than lower one.

Fls. & Frts. : September-October.

Illus. : Bor, *op. cit.* 104, f. 2; U. R. Deshpande & N. P. Singh *op. cit.*

Distrib. : Rare in dry places on rocky plains along with other annual grasses. Bombay; Pune; Ratnagiri; Sindhudurg.

#### BRACHIARIA Griseb.

1. Rhachis more or less flat, herbaceous, sometimes ribbon-like ... *B. mutica*
1. Rhachis triquetrous, sometimes filiform :
  2. Panicles linear with erect racemes of closely crowded, softly hairy spikelets, 0.2-0.25 cm long; rhachis hairy; lower glume a minute scale, 0.03 cm long; spikelets sometimes tipped with purple ... *B. eruciformis*
  2. Panicles various, oblong, lanceolate or spreading; lower glume up to half as long as spikelet :
    3. Spikelets 0.1-0.25 cm long :
      4. Spikelets 0.1-0.2 cm long, paired; lower glume truncate ... *B. reptans*
      4. Spikelets 0.2-0.25 cm long, solitary; lower glume obtuse ... *B. semiundulata*
    3. Spikelets 0.25-0.45 cm long or longer :
      5. Spikelets turgid ... *B. ramosa*
      5. Spikelets not turgid, or if so rhachis not triquetrous :
        6. Spikelets crowded ... *B. distachya*
        6. Spikelets distant ... *B. remota*

*Brachiaria distachya* (L.) Stapf in Prain, Fl. Trop. Afr. 9: 565. 1919; Bor, Grass. Ind. 281. 1960. *Panicum distachyum* L. Mant. 183. 1771; Hook. f. Fl. Brit. India 7: 37. 1896.

Herbs, annual; culms terete, 15-40 cm long. Sheaths compressed, 1-2 cm long; margins ciliate; ligule reduced to a thick hairy ring. Leaves ovate-lanceolate, 1.5-2.5 x 0.8-1.0 cm, rounded and amplexicaul at base, margins scabrid, apex acute. Racemes 2 or 3, simple, spreading,

1.5–2.25 cm long, alternate on a short glabrous or sparsely hairy axis.  
Spikelets solitary, biseriate, obovate–cuneate, c 0.4 cm long, subacute.

*Fls. & Frts.* : August–December.

*Illus.* : Gilliland, Fl. Malaya 3: 177, f. 36. 1971; Matthew, Further

*Illus.* Fl. Tamilnadu Carnatic 4: t. 724. 1988.

*Distrib.* : Rare in open grasslands, waste-lands and along road sides. Kolhapur; Nanded; Ratnagiri; Sangli; Sindhudurg.

**B. eruciformis** (J. E. Sm.) Griseb. in Ledeb. Fl. Ross. 4: 469. 1853; Bor, Grass. Ind. 283. 1960. *Panicum eruciforme* J. E. Sm. in Sibth. & J. E. Sm. Fl. Graeca 1: 44, t. 59. 1806. *P. isachne* Roth ex R. & S. Syst. Veg. 2: 458. 1817; Hook. f. Fl. Brit. India 7: 28. 1896; Cooke, Fl. Pres. Bombay 3: 448. 1958 (Repr. ed.). *Brachiaria isachne* (Roth ex R. & S.) Stapf in Prain, Fl. Trop. Afr. 9: 552. 1919; Blatt. & McC. Bombay Grass. 133. 1935. 'Shimpi', 'Wag-hast'.

Herbs, annual; culms tufted, 20–60 cm tall, decumbent or creeping. Leaves 3–4 x 0.2 cm, lanceolate, appressed hairy. Racemes narrow, 2–9, erecto–patent, 0.75–2.5 cm long. Spikelets secund, elliptic, softly hairy, shortly pedicelled. Grains 0.1–0.15 cm long, ellipsoid to oblong.

*Fls. & Frts.* : September–January.

*Illus.* : Blatt. & McC. *op. cit.* t. 85; Patunkar, Grass. Marathw. 133, f. 40. 1980; Matthew, Further *Illus.* Fl. Tamilnadu Carnatic 4: t. 725. 1988.

*Distrib.* : Common in all districts.

**B. mutica** (Forssk.) Stapf in Prain, Fl. Trop. Afr. 9: 526. 1919; Blatt. & McC. Bombay Grass. 134. 1935; Bor, Grass. Ind. 284. 1960. *Panicum muticum* Forssk. Fl. Aegypt.–Arab. 20. 1775; Hook. f. Fl. Brit. India 7: 34. 1896; Cooke, Fl. Pres. Bombay 3: 456. 1958 (Repr. ed.).

Stout grasses; culms 1.0–2.5 m tall, simple or branched, ascending from prostrate rooting base. Leaves 20–30 x 0.5–1.0 cm, lanceolate with subcordate base, margins scabrid. Spikelets 0.3–0.4 cm long, oblong to oblong–lanceolate, in solitary, paired or pseudo–whorled racemes 2.0–2.5 cm long.

*Fls. & Frts.* : August–January.

*Illus.* : Gilliland, Fl. Malaya 3: facing p. 178, t. 12. 1971.

*Distrib.* : Bombay; Nanded; Parbhani; Pune (Cultivated, Cooke, *op. cit.*).

**B. ramosa** (L.)  
McC. Bombay Grass  
*ramosum* L. Mant.  
Cooke, Fl. Pres. Bo

Herbs, annual  
cm, linear–lanceol  
Spikelets ovoid, lo  
ellipsoid with poin

*Fls. & Frts.* :

*Illus.* : Blatt  
Tamilnadu Carna

*Distrib.* : Co

**B. remota**  
1961 (Repr. ed.)  
Obs. Bot. 4: 17.

Herbs, an  
narrowly linea  
ellipsoid.

*Fls. & Fr*

*Illus.* : 1  
727. 1988.

*Distrib.*  
Yavatmal.

*Notes* :  
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Maharashtra

**B. rep**  
1938; Bor, C  
870. 1759.  
1797; Hook  
448. 1958 (C  
9: 601. 192  
'Chopli'.

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amplexica

**B. ramosa** (L.) Stapf in Prain, Fl. Trop. Afr. 9: 542. 1919; Blatt. & McC. Bombay Grass. 134. 1935; Bor, Grass. Ind. 284. 1960. *Panicum ramosum* L. Mant. 1: 29. 1767; Hook. f. Fl. Brit. India 7: 36. 1896; Cooke, Fl. Pres. Bombay 3: 449. 1958 (Repr. ed.). 'Chapar', 'Chapsura'.

Herbs, annual, erect, tufted, 30–75 cm high. Leaves 5–12 x 0.5–2.0 cm, linear-lanceolate. Panicles 6–8 cm long; spikes 1.5–3.5 cm long. Spikelets ovoid, lower subsessile, upper long-pedicelled. Grains broadly ellipsoid with pointed ends, rugose.

Fls. & Frts. : August–November.

Illus. : Blatt. & McC. op. cit. t.86; Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 726. 1988.

Distrib. : Common in all districts.

**B. remota** (Retz.) Haines, Bot. Bih. Or. 2: 1005. 1924 [3: 1052. 1961 (Repr. ed.)]; Bor, Grass. Ind. 285. 1960. *Panicum remotum* Retz. Obs. Bot. 4: 17. 1786; Hook. f. Fl. Brit. India 7: 38. 1896.

Herbs, annual, c 50 cm high, decumbent. Leaves 7.5 x 0.25 cm, narrowly linear, glabrescent. Spikes c 10 cm long. Spikelets distant, ellipsoid.

Fls. & Frts. : August–November.

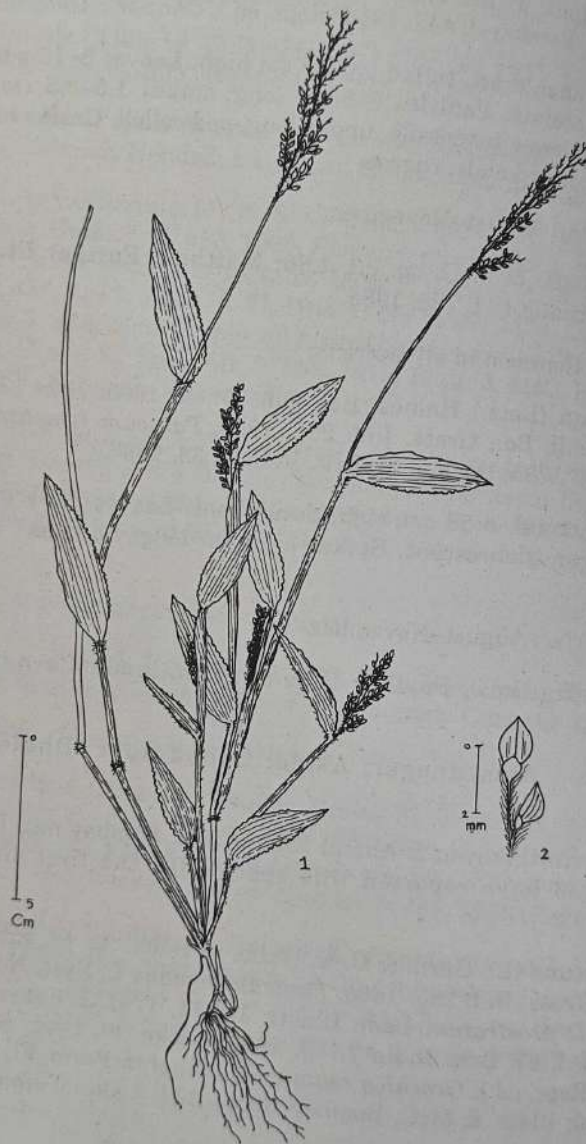
Illus. : Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 727. 1988.

Distrib. : Ahmednagar; Akola; Chandrapur; Dhule; Pune; Yavatmal.

Notes : Karthikeyan & Anand Kumar in J. Bombay nat. Hist. Soc. 80: 257. 1983 have reported this species for the first time from Maharashtra.

**B. reptans** (L.) Gard. & C. E. Hubb. in Hook. Ic. Pl. sub. t. 3363. 1938; Bor, Grass. Ind. 285. 1960. *Panicum reptans* L. Syst. Nat. ed. 10, 870. 1759. *P. prostratum* Lam. Illustr. 1: 171. 1791 & Encycl. 4: 730. 1797; Hook. f. Fl. Brit. India 7: 33. 1896; Cooke, Fl. Pres. Bombay 3: 448. 1958 (Repr. ed.). *Urochloa reptans* (L.) Stapf in Prain, Fl. Trop. Afr. 9: 601. 1920; Blatt. & McC. Bombay Grass. 144. 1935. 'Chimanchara', 'Chopli'.

Annuals, slender, tufted; culms 10–50 cm tall, ascending, rooting at nodes. Leaves 1.5–8.0 x 0.9–1.5 cm, linear-lanceolate, cordate and amplexicaul at base, acute to acuminate at apex. Spikelets ellipsoid;



*Brachiaria semiundulata* (Hochst. ex A. Rich.) Stapf  
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pedicels short, with long slender hairs at tip below spikelets. Grains ellipsoid with pointed ends, rugose.

*Fls. & Frts.* : September–October.

*Illus.* : Blatt. & McC. *op. cit.* t. 92; Ugemuge, Fl. Nagpur Dt. t. 179. 1986; Matthew, Further Illus. F1. Tamilnadu Carnatic 4: t. 728. 1988.

*Distrib.* : Common in all districts.

**B. semiundulata** (Hochst. ex A. Rich.) Stapf in Prain, Fl. Trop. Afr. 9: 556. 1919; Bor, Grass. Ind. 285. 1960; U. R. Drshpande & N. P. Singh, Grass. Maharashtra 32. 1986. *Panicum semiundulatum* Hochst. ex A. Rich. Tent. Fl. Abyss. 2: 364. 1851. *P. villosum* Hook. f. Fl. Brit. India 7: 34. 1896 non Lam. 1791.

Herbs, 10–45 cm high, annual, erect. Spikelets c 0.2 cm long, solitary or in pairs, subsessile or short-pedicelled. Grains c 0.175 cm long, ellipsoid, pale, rugose.

*Fls. & Frts.* : September–October.

*Illus.* : Matthew, Further Illus. F1. Tamilnadu Carnatic 2: t. 729. 1988.

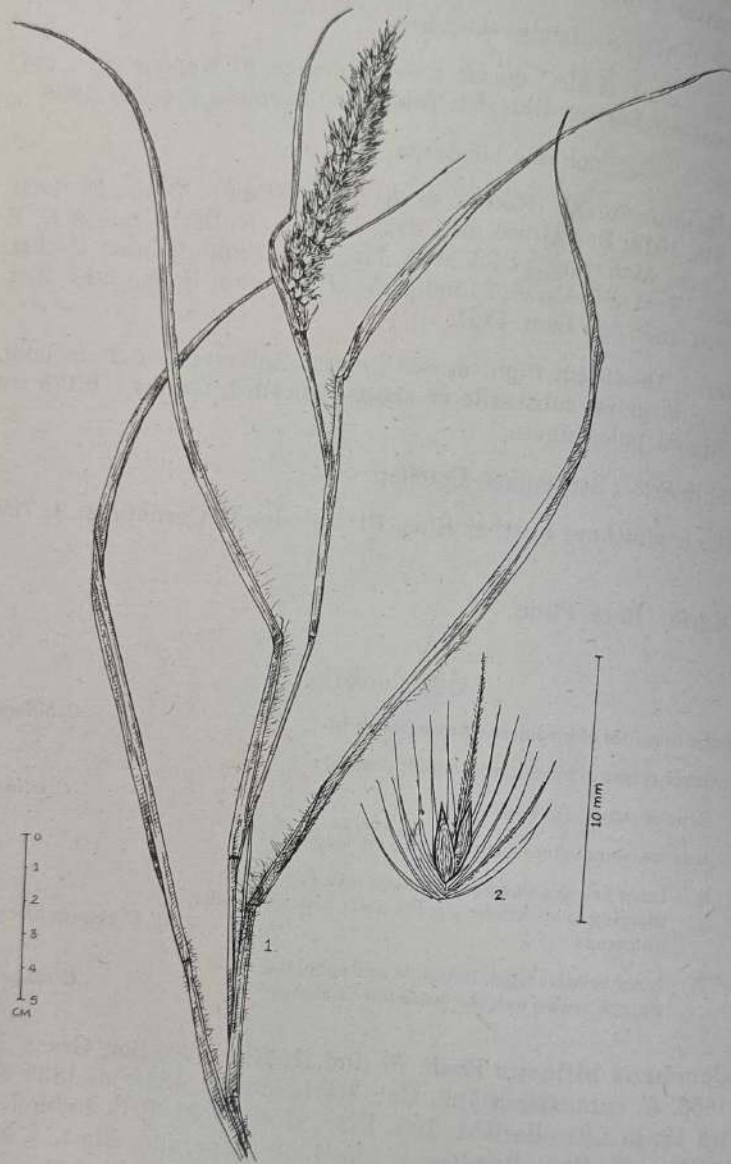
*Distrib.* : Rare. Pune.

#### CENCHRUS L.

- |   |     |                           |
|---|-----|---------------------------|
| 1. Bristles or spines of involucre retrosely scabrid  | ... | <i>C. biflorus</i>        |
| 1. Bristles or spines of involucre antrosely scabrid :  |     |                           |
| 2. Bristles connate at base only  | ... | <i>C. ciliaris</i>        |
| 2. Bristles connate into a cup, 0.1–0.3 cm long :   |     |                           |
| 3. Inner bristles slender, widened into a cup at base, tapering to a setiform tip; the outer bristles slender, numerous | ... | <i>C. pennisetiformis</i> |
| 3. Inner bristles rigid, flattened and subulate, acute at tip, not drawn out; the outer few or absent                   | ... | <i>C. setigerus</i>       |

**Cenchrus biflorus** Roxb. Fl. Ind. 1: 238. 1820; Bor, Grass. Ind. 287. 1960. *C. catharticus* Del. Cat. Hort. Monsp. 1838: 4. 1839 & in Linnaea 13: in Litt.-Bericht, 103. 1839; Hook. f. Fl. Brit. India 7: 90. 1896; Cooke, Fl. Pres. Bombay 3: 433. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 186. 1935. 'Bhoront', 'Kukar'.

Annuals; stems 15–30 cm high, tufted. Leaves 2–5 x 0.2–0.7 cm, rough, flat; ligule a ring of hairs. Peduncles exserted. Inflorescence



*Cenchrus pennisetiformis* Hochst. & Steud. ex Steud.  
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spike-like, 2.5–15.0 cm long. Spikelets 0.35–0.6 cm long. Rhachis twisted like a cork-screw. Bristles ultimately becoming black.

*Fls. & Frts.* : October–December.

*Illus.* : Blatt. & McC. *op. cit.* t. 119; Matthew, Further *Illus.* Fl. Tamilnadu Carnatic 4: tt. 730 & 731. 1988.

*Distrib.* : Dhule (Blatt. & McC. *op. cit.*); Nagpur; Thane.

**C. ciliaris** L. Mant. Alt. 302. 1771; Bor, Grass. Ind. 287, f. 33. 1960. *Pennisetum cenchroides* L. C. Rich. in Pers. Syn. 1: 72. 1805; Hook. f. Fl. Brit. India 7: 88. 1896; Cooke, Fl. Pres. Bombay 3: 432. 1958 (Repr. ed.). *P. ciliare* Link, Hort. Berol. 1: 213. 1827; Blatt. & McC. Bombay Grass. 181, t. 116. 1935. 'Anjandhaman'.

Herbs, 15–45 cm high. Leaves linear, 3–9 cm long with tubercle based hairs. Racemes cylindric, 2.5–4.5 cm long; involucre bristles free, antrorsely scabrid; inner c 1 cm long, puberulous. Spikelets 0.43–0.5 cm long, oblong-lanceolate, 3–1 in each involucre; glumes c 0.2 cm long, suborbicular, shortly cuspidate; lower lemma suborbicular, c 0.3 cm long.

*Fls. & Frts.* : July–December.

*Illus.* : Blatt. & McC. *op. cit.*; Bor, *op. cit.*; Matthew, *Illus.* Fl. Tamilnadu Carnatic 4: tt. 819 & 820. 1982.

*Distrib.* : Ahmednagar; Buldhana; Deccan (Cooke, *op. cit.*); Dhule; Jalgaon (Blatt. & McC. *op. cit.*); Satara; Thane.

**C. pennisetiformis** Hochst. & Steud. ex Steud. Syn. Pl. Glum. 1: 109. 1854; Bor, Grass. Ind. 289. 1960. *Pennisetum cenchroides* L. C. Rich. var. *echinoides* (Wight ex Steud.) Hook. f. Fl. Brit. India 7: 88. 1896. 'Sankaveth'.

Herbs, perennial, tufted, c 30 cm high, hairy at nodes. Leaves 6.5–15.0 x 0.2–0.3 cm, narrowly linear, finely acuminate. Panicles 4.5–6.5 cm long. Spikelets 0.6–0.8 cm long, red.

*Fls. & Frts.* : August–September.

*Distrib.* : Ahmednagar; Buldhana; Dhule; Jalgaon; Nasik.

**C. setigerus** Vahl, Enum. Pl. 2: 395. 1806; Bor, Grass. Ind. 290. 1960. *C. biflorus* Hook. f. Fl. Brit. India 7: 89. 1896 non Roxb. 1820; Cooke, Fl. Pres. Bombay 3: 433. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 185. 1935. 'Anjan', 'Ohaman'.

Herbs, 15–60 cm high, annual. Leaves 7.5–25.0 x 0.3–1.0 cm, linear-lanceolate, finely acuminate; ligule a pubescent ring. Racemes 5–10 cm long, solitary, cylindric; involucre usually 2-flowered. Spikelets c 0.4 cm long, subglobose. Grains c 0.2 x 0.15 cm, orbicular-oblong, compressed, smooth, shining.

Fls. & Frts. : August–February.

Illus. : Blatt. & McC. *op. cit.* t. 118; Patunkar, Grass. Marathi 138, f. 41. 1980.

Distrib. : Aurangabad; Beed; Jalgaon; Parbhani; Sholapur.

#### CENTOTHECA Desv. ('Centosteca')

*Centotheca lappacea* (L.) Desv. in Nouv. Bull. Sci. Soc. Philom. Paris 2: 189. 1810; Hook. f. Fl. Brit. India 7: 332. 1897; Cooke, Fl. Pres. Bombay 3: 566. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 278. 1935; Bor, Grass. Ind. 457, f. 50. 1960. *Cenchrus lappaceus* L. Sp. Pl. ed. 2. 1488. 1763.

Perennials, 40–100 cm tall; culms tufted, stout, erect. Leaves 8–16 x 2.5–3.0 cm, lanceolate to ovate, base unequal sided. Panicles 8–10 cm long; spikelets 0.4–0.6 cm long, oblong-ovate, 1-many flowered; lower and upper glume unequal, membranous, 3–5-nerved, shorter than lemmas; lemmas oblong, obtuse or emarginate, with a mucro, 5–7-nerved, bulbous based hairy or sometimes glabrous.

Fls. & Frts. : September–October.

Illus. : Blatt. & McC. *op. cit.* t. 189; Bor, *op. cit.*; W.D. Clayton in Hepper, Fl. W. Trop. Afr. 3(2): 382, f. 428. 1972; Matthew, Illus. Fl. Tamilnadu Carnatic 4: tt. 821 & 822. 1982.

Distrib. : A few in partially shady places. Chandrapur; Ratnagiri; Sindhudurg.

#### CHIONACHNE R. Br.

- |  |     |                     |
|--|-----|---------------------|
| 1. Fruit-case solitary, dead-white, shining, smooth and glabrous, compressed, oblong, rounded above, not furnished with membranous wings                                   | ... | <i>C. koenigii</i>  |
| 1. Fruit-cases several, jointed together, cylindrical, yellowish to yellowish-brown, furnished on margins above with membranous wings which clasp base of fruit next above | ... | <i>C. semiteres</i> |

*Chionachne koenigii* (Spr.) Thw. Enum. Pl. Zeyl. 357. 1864; Bor, Grass. Ind. 262. 1960. *Coix koenigii* Spr. Syst. 1: 239. 1825. *Polytoca*

*barbata* (Roxb.)  
Pres. Bombay 3  
1935. 'Kanta-k'

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*barbata* (Roxb.) Stapf ex Hook. f. Fl. Brit. India 7: 102. 1896; Cooke, Fl. Pres. Bombay 3: 519. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 6. 1935. 'Kanta-karvel', 'Kasadi', 'Varival'.

Herbs, 70–140 cm high, perennial. Leaves 6–45 x 0.8–1.7 cm, linear-lanceolate, clothed by bristly hairs, apex acute to acuminate. Spikes few and distantly arranged in the upper leaf axils on weak peduncles. Female spikelets 1 or 2 per spike, c 0.7 x 0.3 cm, plano-convex, ellipsoid; male spikelets many with coriaceous glumes. Grains 0.4–0.5 cm long, embedded within the long glume.

*Fls. & Frts.* : September–December.

*Illus.* : Blatt. & McC. *op. cit.* t. 3; Patunkar, Grass. Marthw. 122, f. 37. 1980.

*Distrib.* : Akola; Amaravati; Aurangabad; Bombay; Buldhana; Chandrapur; Dhule; Kolhapur; Nagpur; Nanded; Nasik; Osmanabad; Parbhani; Pune; Sangli; Satara; Sholapur; Thane (Blatt. & McC. *op. cit.*); Yavatmal.

*C. semiteres* (Bth.) Henr. in Meded. Rijks Herb. n. 67, 16. 1931; Bor, Grass. Ind. 263. 1960. *Polytoca semiteres* Bth. in Bth. & Hook. f. Gen. Pl. 3: 1113. 1882; Hook. f. Fl. Brit. India 7: 101. 1896.

Herbs, annual; culms terete, 30–70 cm tall, decumbent, nodes bearded. Sheaths compressed, upper keeled, 2.0–5.5 cm long; margins ciliate; ligule membranous. Leaves 5–20 x 0.5–0.9 cm, linear-lanceolate, hispid, scabrid along margins, acuminate at apex. Racemes monoecious, 1.0–2.3 cm long, the lowest two spikelets female, the upper ones male. Spathes herbaceous. Male spikelets linear-lanceolate, 0.8–0.9 cm long; female spikelets two, 0.48–0.5 cm long. Grains 0.4–0.5 cm long.

*Fls. & Frts.* : September–December.

*Illus.* : Matthew, Illus. Fl. Tamilnadu Carnatic 4: tt. 823 & 824. 1982.

*Distrib.* : Rare, in hedges around fields. Osmanabad.

# CHLORIS Swartz

*C. bournei*

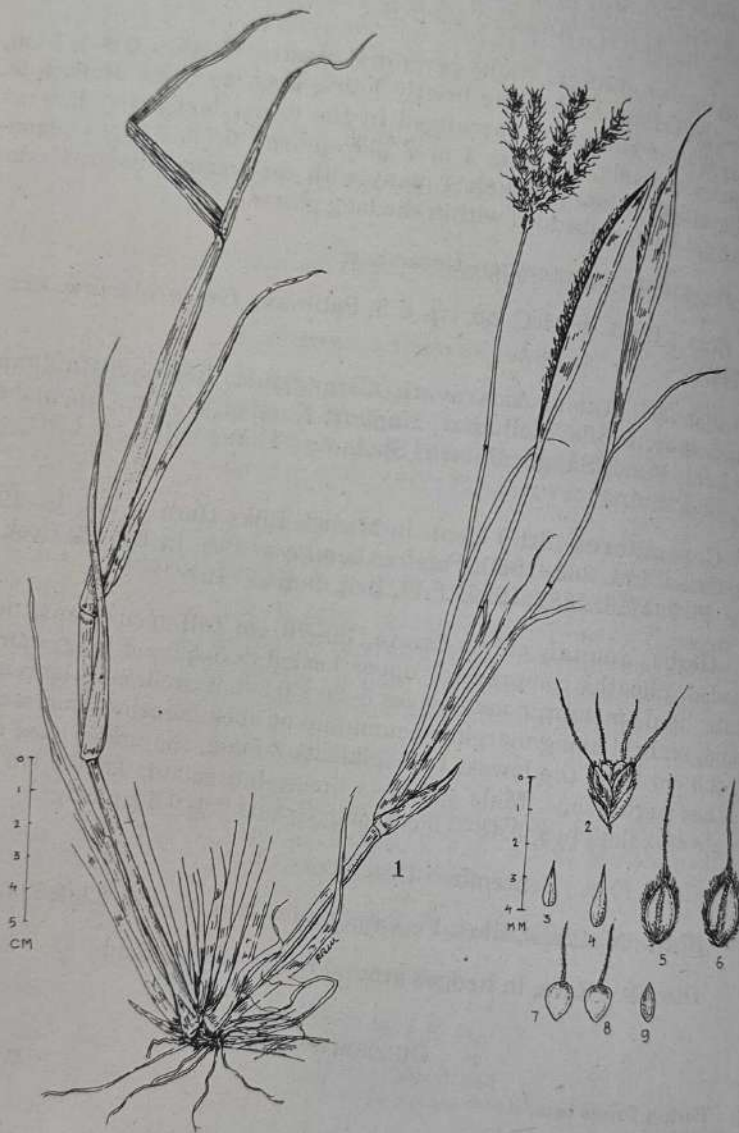
1. Perfect florets two

1. Perfect floret one :

2. Empty lemmas above fertile floret solitary, well developed or rudimentary :

3. Spikes up to 25 cm long, widely spreading; upper glume 0.5–0.75 cm long; empty lemma represented by a fine awn up to 1.25 cm long

... *C. dolichostachya*



*Chloris bournei* Rang. & Tad.  
 1. Habit 2. Spikelet 3. Lower glume 4. Upper glume  
 5&6. Perfect florets 7&8. Imperfect florets 9. Grain

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3. Spikes up to 6.5 cm long, closely crowded; upper glume 0.3–0.35 cm long; empty lemma oblanceolate, truncate with an arista 0.4 cm or more long
2. Empty lemmas above lowest two to four : ... *C. virgata*
4. Culms puberulous below inflorescence
4. Culms glabrous below inflorescence : ... *C. quinquesetica*
5. Spikelets 0.3 cm long or more; awns 3, 0.2–0.3 cm long
5. Spikelets 0.25 cm long; awns 3–5, up to 0.8 cm long or more : ... *C. gayana*
6. Perennials; spikelets cuneate with 4–5 awns; second lemma cuneiform ... *C. montana*
6. Annuals; spikelets plump with 3 awns (rarely 4); second lemma globose ... *C. barbata*

**Chloris barbata** Swartz, Fl. Ind. Occ. 1: 200. 1797; Hook. f. Fl. Brit. India 7: 292. 1896; Cooke, Fl. Pres. Bombay 3: 557. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 256. 1935; Bor, Grass. Ind. 465. 1960. 'Gondvel', 'Goshya', 'Mesi'.

Herbs, 30–45 cm long, tufted, base creeping. Leaves 5–7 x 0.1 cm, narrowly linear, flat or folded, finely acuminate. Spikes 3.5–4.5 cm long. Spikelets 0.2 cm long, arranged in rows, unilateral on axis, 2-awned. Grains subtrigonal.

*Fls. & Frts.* : August–December.

*Illus.* : Blatt. & McC. *op. cit.* t. 171; Gilliland, Fl. Malaya 3: facing p. 68, t. 2. 1971; Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 732. 1988.

*Distrib.* : Common in all districts.

**C. bournei** Rang. & Tad. in J. Indian Bot. 2: 189. 1921; Bor. Grass. Ind. 466. 1960; U. R. Deshpande & N. P. Singh, Grass. Maharashtra 35. 1986.

Herbs, perennial; culms 40–70 cm tall, decumbent and rooting at lower nodes. Sheaths compressed, c 3 cm long; ligule a ciliate rim. Leaves 2–10 x 0.2–0.35 cm, convolute or flat, linear-lanceolate, acuminate at apex. Spikes 3–5, digitate, spreading, 3–7 cm long. Spikelets 0.35–0.4 cm long with lower 2 perfect florets and 2 imperfect florets above them. Grains linear-oblong, 0.2–0.25 cm long, brown with loose pericarp.

*Fls. & Frts.* : September–January.

*Distrib.* : Rare. Aurangabad; Pune.

*C. dolichostachya* Lagasca, Gen. & Sp. Pl. 5. 1816; Bor, Grass. Ind. 466. 1960. *C. incompleta* Roth, Nov. Pl. Sp. 60. 1821; Hook. f. Fl. Brit. India 7: 290. 1896; Cooke, Fl. Pres. Bombay 3: 556. 1958 (Repe- ed.); Blatt. & McC. Bombay Grass. 253. 1935.

Herbs, perennial; culms terete, 60–130 cm tall. Leaves narrowed into a fine point, flat, 8–30 x 0.3–0.9 cm, linear-lanceolate. Spikes 4–6 cm long, narrowly fusiform, 2-awned. Caryopsis 0.4–0.45 cm long, oblong-lanceolate, brown, dorsally compressed.

*Fls. & Frts.* : September–December.

*Illus.* : Blatt. & McC. *op. cit.* t. 168; Mahesh. *Illus. Fl. Delhi* f. 257. 1966; Matthew, *Illus. Fl. Tamilnadu Carnatic* 4: tt. 825 & 826. 1982.

*Distrib.* : Akola; Amaravati; Aurangabad; Chandrapur; Dhule; Jalgaon; Nanded; Nasik; (Cooke, *op. cit.*); Osmanabad; Pune; Thane; Yavatmal.

*C. gayana* Kunth ex Stapf in Dyer, Fl. Cap. 7: 642. 1900; Blatt. & McC. Bombay Grass. 258. 1935; Bor, Grass. Ind. 466, f. 51. 1960; U. R. Deshpande & N. P. Singh, Grass. Maharashtra 35. 1986.

Annuals or perennials, 0.6–1.2 m high; culms erect or geniculate ascending, or prostrate at base. Leaves linear, long-tapering to a fine point, 1.5–30.0 x 0.6–0.8 cm; sheaths glabrous or sparingly hairy near mouth; ligules membranous, short, long-hairy. Spikes 6–15, umbelled, sessile, 6–10 cm long, greenish or brownish. Spikelets c 0.3 cm long, 3–4-flowered, shortly 2-awned.

*Fls. & Frts.* : July–October.

*Illus.* : Bor, *op. cit.*; W. D. Clayton in Hepper, Fl. W. Trop. Afr. 3(2): 401, f. 433. 1972.

*Distrib.* : Dhule; Jalgaon; Pune.

*C. montana* Roxb. Fl. Ind. 1: 331. 1820; Hook. f. Fl. Brit. India 7: 292. 1896; Blatt. & McC. Bombay Grass. 257. 1935; Bor, Grass. Ind. 466. 1960.

Herbs, tufted; culms terete, 10–40 cm tall. Leaves 3–15 x 0.2–0.3 cm, flat or folded, linear, finely acuminate. Spikes 8–10, terminal. Spikelets c 0.2 cm long, purple, shortly pedicelled, unilateral, biseriate, thin, slender. Grains 0.2–0.23 cm long, subtrigonus, brownish.

*Fls. & Frts.* : September–October.

*Illus.* : 1  
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*Illus.* : Rang. & Tad. S. Indian Gr. 269 & 270, f. 204 & 205. 1921; Matthew, Further *Illus. Fl. Tamilnadu Carnatic* 2: t. 733. 1988.

*Distrib.* : Ahmednagar; Aurangabad; Beed; Bombay; Nanded; Nasik (Blatt. & McC. *op. cit.*); Raigad; Sindhudurg; Thane (Blatt. & McC. *op. cit.*).

*C. quinquesetica* Bhide in J. Proc. Asiat. Soc. Bengal (N. S.) 8: 311. 1912; Blatt. & McC. Bombay Grass. 257. 1935; Bor, Grass. Ind. 466. 1960.

Perennials, c 60 cm high, tufted, nodes swollen, rooting; stems zig-zag. Leaves 2-15 x 0.25-0.5 cm, flat, apex acuminate, base truncate. Spikes few to many, fascicled, 2.5-5.0 cm long. Spikelets 4-5-flowered.

*Fls. & Frts.* : August-January.

*Distrib.* : Bombay; Jalgaon; Pune; Ratnagiri; Thane.

*C. virgata* Swartz, Fl. Ind. Occ. 1: 203. 1797; Hook. f. Fl. Brit. India 7: 291. 1896; Blatt. & McC. Bombay Grass. 255. 1935; Bor, Grass. Ind. 468. 1960. '*Gholshep*', '*Ghorapuchhi*'.

Herbs; culms tufted up to 1.5 m high. Leaves 4.2-30.0 x 0.2-0.5 cm, linear. Spikes 5-15. Spikelets c 0.2 cm long, ovate-lanceolate, 2-awned. Caryopsis c 0.2 cm long, subtrigonus.

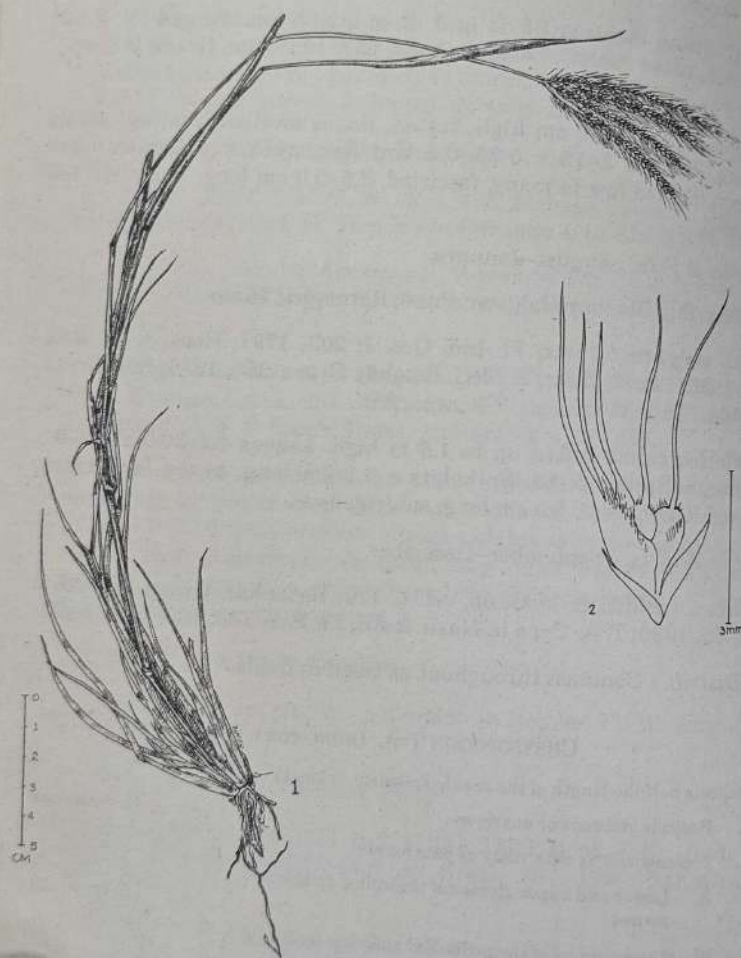
*Fls. & Frts.* : September-December.

*Illus.* : Blatt. & McC. *op. cit.* t. 170; Patunkar, Grass. Marathw. 218, f. 65. 1980; T. A. Cope in Nasir & Ali, Fl. Pak. 143: 122, f. 14. 1982.

*Distrib.* : Common throughout as weed in fields.

CHRYSOPOGON Trin. (*nom. cons.*)

1. Pedicels half the length of the sessile spikelets or longer :
  2. Pedicels glabrous or nearly so ... *C. aciculatus*
  2. Pedicels villous with rusty or pale hairs :
    3. Lower and upper glumes of pedicelled spikelets awned ... *C. orientalis*
    3. Lower glume of the pedicelled spikelets with long awn; upper glume not or shortly awned :
      4. Leaves conspicuously distichous, often plicate; sheaths compressed below, acutely keeled, often beset with bristles from bulbous bases ... *C. asper*
      4. Leaves not as above; sheaths rounded on back ... *C. lancearius*



*Chloris quinquesetica* Bhide  
1. Habit 2. Spikelet

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*Chrysopog*  
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*Andropogon aci*  
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erect, purplish  
spikelets 0.3  
bidentate, 0.3-

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Tamilnadu C

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1935; Bor,  
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1. Pedicels shorter than half the length of the sessile spikelets :
  5. Leaves conspicuously distichous ... *C. polyphyllus*
  5. Leaves not distichous :
    6. Pedicelled spikelets definitely shorter than sessile; hairs chocolate-brown or rufous-brown; lower glume of pedicelled spikelet not awned ... *C. hackelii*
    6. Pedicelled spikelets a little shorter than, equal to, or longer than sessile; hairs golden or golden-brown or if rufous-brown then lower glume of pedicelled spikelet awned :
      7. Upper glume of sessile spikelet keeled, pectinate-ciliate in lower two-thirds or three-quarters with long golden or golden-brown rigid hairs ... *C. fulvus*
      7. Upper glume of sessile spikelet shortly ciliate in upper quarter only ... *C. serrulatus*

**Chrysopogon aciculatus** (Retz.) Trin. Fund. Agrost. 188. 1822; Blatt. & McC. Bombay Grass. 68. 1935; Bor, Grass. Ind. 115. 1960. *Andropogon aciculatus* Retz. Obs. Bot. 5: 22. 1789; Hook. f. Fl. Brit. India 7: 188. 1896; Cooke, Fl. Pres. Bombay 3: 504. 1958 (Repr. ed.).

Perennials, with creeping, woody rhizome; culms erect or decumbent-ascending, 20-40 cm tall, nodes glabrous. Leaves mostly basal, 3-8 x 0.3-0.5 cm, linear, glabrous, apex obtuse or acute. Panicles erect, purplish, 8-12 cm long, with 4-5, 2 cm long racemes. Sessile spikelets 0.3-0.35 cm long, callus brownish hairy; lower glume bidentate, 0.3-0.33 cm long, 3-nerved, upper glume aristate, ciliate.

*Fls. & Frts.* : August-October.

*Illus.* : Gilliland, Fl. Malaya 3: 235, f. 52. 1971; Matthew, Illus. Fl. Tamilnadu Carnatic 4: tt. 829 & 830. 1982.

*Distrib.* : Bombay; Pune; Raigad (Blatt. & McC. *op. cit.*); Ratnagiri; Satara; Sindhudurg.

**C. asper** (Heyne ex Hook. f.) Blatt. & McC. Bombay Grass. 68. 1935; Bor, Grass. Ind. 116. 1960. *Andropogon asper* Heyne ex Hook. f. Fl. Brit. India 7: 189. 1896.

Rootstock woody, creeping; culms 30-90 cm high, erect or ascending, leafy below, slender above. Leaves 30-45 x 1.2-1.8 cm, broadly linear, acute, cordate, coriaceous, margins spinulosely serrulate, and with a few long tubercle-based cilia towards the broad semi-amplexicaul base. Panicles 1.8 cm long, narrow, of many whorls of short, unequal, simple, smooth erect branches bearing solitary, rarely 2,

erect spikes. Sessile spikelets c 0.6 cm long; pedicelled spikelets c 0.8 cm long, narrowly lanceolate.

*Distrib.* : Raigad (Blatt. & McC. *op. cit.*).

*C. fulvus* (Spr.) Chiov. Fl. Somalia 1: 327. 1929; Bor, Grass. Ind. 116. 1960. *Pollinia fulva* Spr. Pugill. 2: 10. 1815. *Andropogon monticola* R. & S. Syst. Veg. 2, Mant. 3: 665. 1827; Hook. f. Fl. Brit. India 7: 192. 1896; Cooke, Fl. Pres. Bombay 3: 505. 1958 (Repr. ed.). *A. monticola* var. *robustus* Hook. f. *op. cit.* 193. *Chrysopogon montanus* Trin. ex Spr. Neue Ent. 1821 deck. 2: 93; Blatt. & McC. Bombay Grass. 70. 1935 p.p. 'Agiva', 'Gogar', 'Kahandol', 'Vagnaki'.

Perennials, densely tufted, 30–90 cm high. Leaves 3–6 x 0.3 cm, narrowly linear. Inflorescence of dense panicles, 5–12 cm long. Sessile spikelets 0.6–0.7 cm long, with callus bearded on one side with rufous hairs; pedicelled 0.5–0.6 cm long. Grains yellow.

*Fls. & Frts.* : September–December.

*Illus.* : Blatt. & McC. *op. cit.* t. 42; Mahesh. Illus. Fl. Delhi f. 273. 1966; Patunkar, Grass. Marathw. 47, f. 12. 1980; Ugemuge, Fl. Nagpur Dt. t. 180. 1986.

*Distrib.* : Common throughout on open grasslands.

*Notes* : Cooke (*op. cit.*) had not seen any specimen and included it on the authority of Lisboa and Woodrow (*op. cit.*). However, Blatter & McCann (1928) confirmed its occurrence, based on collections from Gujarat, Maharashtra, S. M. Country and N. Kanara.

*C. hackelii* (Hook. f.) C. E. C. Fischer in Gamble, Fl. Madras Pres. 1739. 1934 [3: 1205. 1958 (Repr. ed.)]; Bor, Grass. Ind. 117. 1960; U. R. Deshpande & N. P. Singh, Grass. Maharashtra 36. 1986. *Andropogon hackelii* Hook. f. Fl. Brit. India 7: 194. 1896.

Herbs, perennial; culms 1.2–1.5 m or more, leafy, smooth, branching upward. Leaves 60–90 x 0.4–0.6 cm, narrow, coriaceous, smooth, finely acuminate, striate, margins subscabrous; sheath subterete, keeled; ligule a ridge of hairs. Panicles 10–15 cm long, branches in 6–10 whorls, oblong; spike solitary. Sessile spikelets yellow; pedicelled spikelets pale-green, yellow or purplish, glume not curved.

*Fls. & Frts.* : August–November.

*Illus.* : Ramam. in Sald. & Nicols. Fl. Hassan Dt. 702, f. 111 E. 1976.

*Distrib.* : Rare in moist clayey soils. Chandrapur; Jalgaon.

*C. lancearius* 1961 (Repr. ed.); B Ind. 118. 1960. *Andropogon lancearius* 1896; Cooke, Fl. Pres.

Herbs, c 1 m long, margins spinulose long; lower glume oblong, c 0.4 cm long; spikelets lanceolate.

*Fls. & Frts.* :

*Distrib.* : Raigad

*Notes* : Cooke (1928) confirmed its occurrence from Panchgani.

*C. orientalis* Chine 7: 332. 1 Opusc. 69. 1831: 395. 1854; *Andropogon wightianus* Nees Bombay Grass

Perennial 8–10 cm long 0.2–0.6 cm, long, branches 0.6–0.7 cm long glume awned glume awned

*Fls. & Frts.* :

*Illus.* : 1988.

*Distrib.* :

*Notes* : Cooke (1928) confirmed its occurrence from Panchgani.

*C. lancearius* (Hook. f.) Haines, Bot. Bih. Or. 1036. 1924 [3: 1083. 1961 (Repr. ed.)]; Blatt. & McC. Bombay Grass. 69. 1935; Bor, Grass. Ind. 118. 1960. *Andropogon lancearius* Hook. f. Fl. Brit. India 7: 190. 1896; Cooke, Fl. Pres. Bombay 3: 504. 1958 (Repr. ed.).

Herbs, c 1 m high. Leaves lanceolate, acuminate, c 30 x 1 cm, margins spinulose. Panicles c 15 cm long. Sessile spikelets c 0.6 cm long; lower glume oblong, truncate or notched; lower lemma linear-oblong, c 0.4 cm long; upper lemma linear, c 0.25 cm long; pedicelled spikelets lanceolate, acute, c 0.8 cm long.

Fls. & Frts. : October–November.

Distrib. : Rare. Satara; Sindhudurg.

Notes : Cooke (*op. cit.*) had included it on the authority of Woodrow and he had not seen any specimen from this area. Blatter & McCann (1928) confirmed its occurrence in Maharashtra based on a collection from Panchgani.

*C. orientalis* (Desv.) A. Camus in Lecomte, Fl. Gen. del' Indo-Chine 7: 332. 1922; Bor, Grass. Ind. 118. 1960. *Rhaphis orientalis* Desv. Opusc. 69. 1831. *Andropogon wightianus* Nees ex Steud. Syn. Pl. Glum. 1: 395. 1854; Hook. f. Fl. Brit. India 7: 191. 1896. *Chrysopogon wightianus* Nees ex Steud. Syn. Pl. Glum. 397. 1855; Blatt. & McC. Bombay Grass. 69. 1935.

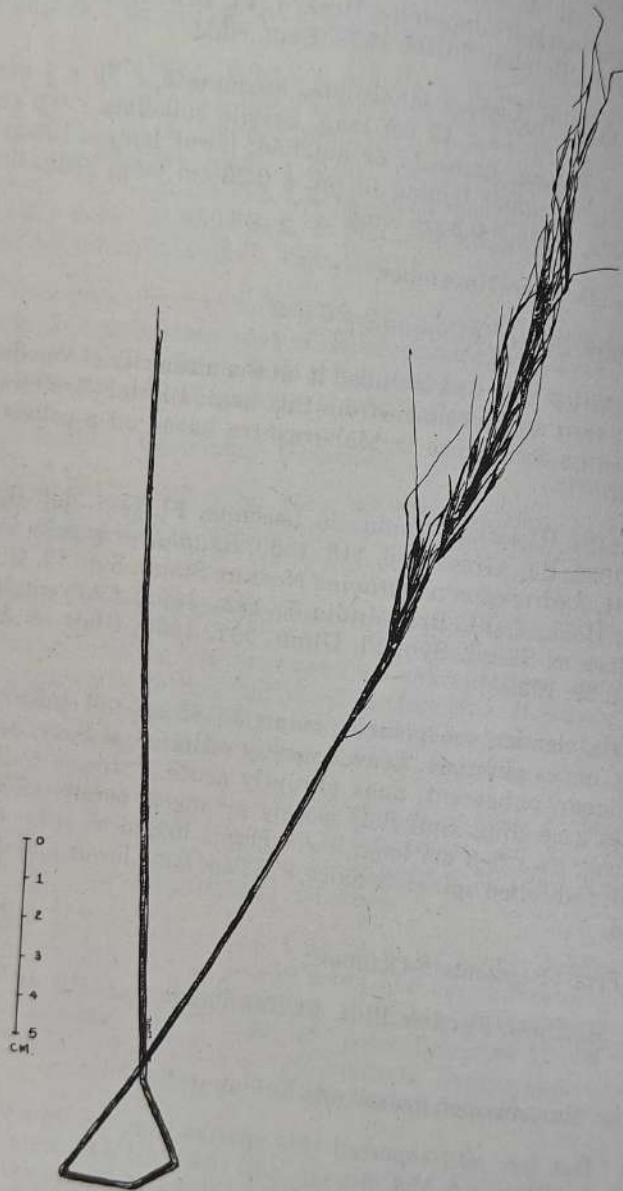
Perennials, slender, conspicuous; culms 35–45 cm tall, internodes 8–10 cm long, nodes glabrous. Leaves mostly collected at base, 5–10 x 0.2–0.6 cm, linear, pubescent, apex abruptly acute. Panicles 8–16 cm long, branches ascending. Spikelets loosely arranged: sessile spikelets 0.6–0.7 cm long; awn 5–6 cm long; lower glume hispid at apex; upper glume awned; pedicelled spikelets hairy, c 1.3 cm long; lower and upper; glume awned.

Fls. & Frts. : September–October.

Illus. : Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 737. 1988.

Distrib. : Rare in open grasslands. Kolhapur; Sindhudurg.

Notes : Bor (*op. cit.*) reported this species from Andhra Pradesh and Tamilnadu. Blatter & McCann (*op. cit.*) cite 'Castle Rock and Jog to Siddapur' as localities from N. Kanara, Karnataka. Kulkarni & Sharma (*J. Econ. Tax. Bot.* 5: 873. 1984) have reported this for the first time from Maharashtra.



*Chrysopogon orientalis* (Desv.) A. Camus

*C. polyph*  
nat. Hist. Soc.  
Grass. Ind. 118  
Brit. India 7: 19

Herbs, per  
root stock cree  
hairs of pedice  
mucronate.

Fls. & Fr

Illus. : B

Distrib. :

*C. serr*  
Bor, Grass. In  
Brit. India 7:

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Sheaths com  
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pyramidal,  
long, awned

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& McC. E  
Deshpand

Ann  
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1. Spike

*C. polyphyllus* (Hack. ex Hook. f.) Blatt. & McC. in J. Bombay nat. Hist. Soc. 32: 416. 1928 & Bombay Grass. 77, t. 43. 1935; Bor, Grass. Ind. 118. 1960. *Andropogon polyphyllus* Hack. ex Hook. f. Fl. Brit. India 7: 194. 1896.

Herbs, perennial, 60–90 cm high, simple or fastigiate branched; root stock creeping. Leaves distichous. Panicle branches ascending; hairs of pedicel and callous yellow; upper glumes of sessile spikelets mucronate.

*Fls. & Frts.* : September–December.

*Illus.* : Blatt. & McC. *op. cit.*

*Distrib.* : Pune; Yavatmal.

*C. serrulatus* Trin. in Mem. Acad. Sci. Petersb. 6, 2: 318. 1832; Bor, Grass. Ind. 118. 1960. *Andropogon monticola* var. *trinii* Hook. f. Fl. Brit. India 7: 193. 1896.

Herbs, perennial; culms tufted, 30–90 cm tall, leafy towards base. Sheaths compressed. Ligule a ciliate ring. Leaves 5–20 x 0.25–0.7 cm, rigid, margins scaberulous, apex acute. Panicles oblong-ovoid to pyramidal, 3–12 cm long; raceme 1-noded. Sessile spikelets 0.6–0.7 cm long, awned; pedicelled spikelets 0.6–0.7 cm long.

*Fls. & Frts.* : July–December.

*Distrib.* : Amaravati; Dhule; Nanded; Thane.

#### CLEISTACHNE Bth.

*Cleistachne stocksii* Hook. f. Fl. Brit. India 7: 162. 1896; Blatt. & McC. Bombay Grass. 64. 1935; Bor, Grass. Ind. 119. 1960; U. R. Deshpande & N. P. Singh, Grass. Maharashtra 37. 1986.

Annuals or perennials, c 1 m tall, erect. Leaves c 30 cm long, linear, finely acuminate, margins ciliate. Panicles 15–20 cm long, peduncled. Spikelets c 0.5 cm long.

*Fls. & Frts.* : October.

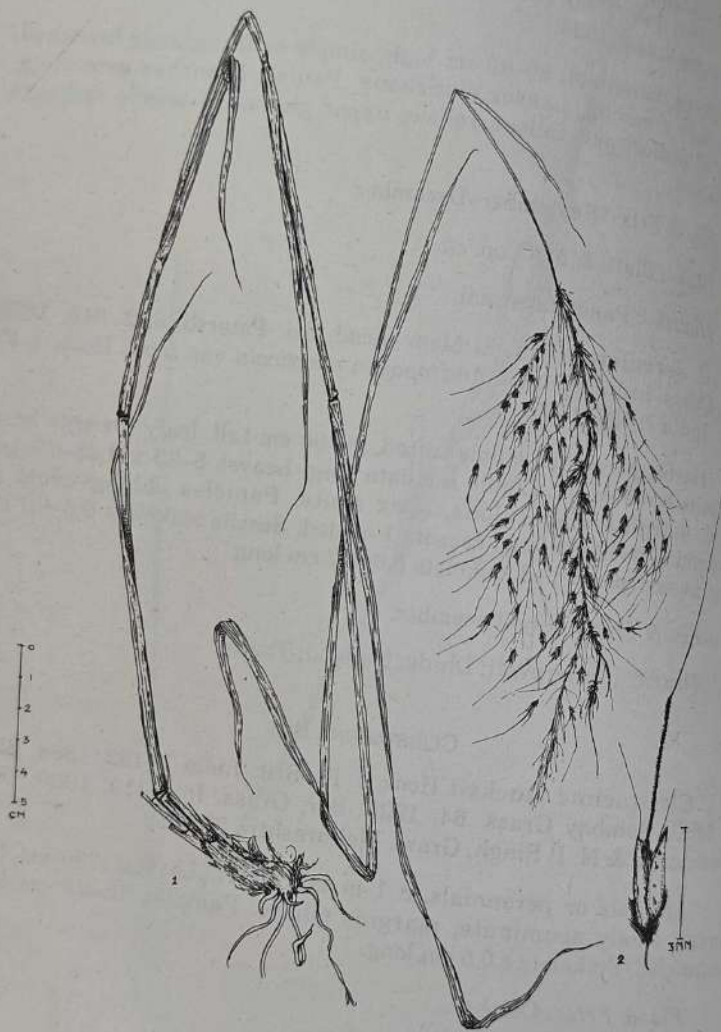
*Illus.* : Blatt. & McC. *op. cit.* t. 39.

*Distrib.* : Bombay; Thane.

#### COELACHNE R. Br.

*C. minuta*

1. Spikelets 0.1–0.13 (–0.15) cm long; stamens usually 2



*Chrysopogon serrulatus* Trin.  
1. Habit 2. Spikelet

1. Spikelets 0.15-0.2
2. Panicles few  
florets dense
2. Panicles ma  
spikelets 0.

**Coelachne**  
1961; Ved Praka  
Ved Prakash & J  
Naik in Reinwa  
1980.

Perennials  
long, nodes hai  
nerves above, g  
long. Spikelets  
pedicels; lower  
lemma longer t

Fls. & Fr

Illus. : Na

Distrib.  
Satara; Sindh

Notes : It

**C. perp**  
Bor, Grass. In  
1984; S. M. A  
Arn. ex Steud

Tufted,  
with spreadi  
villous.

Fls. & I

Distrib  
cit.)

**C. sim**  
Linn. Soc. 1  
in Fasc. Fl.  
ex Steud. S  
Fl. Brit.  
*simpliciusc*  
McC. Bomb

1. Spikelets 0.15–0.25 (–0.3) cm long; stamens 3 :
  2. Panicles few-flowered, lax; spikelets 0.25–0.3 cm long; florets densely bearded at base
  2. Panicles many-flowered, mostly contracted, spiciform; spikelets 0.15–0.25 cm long; florets glabrous at base
- ... *C. perpusilla*  
... *C. simpliciuscula*

**Coelachne minuta** Bor in J. Bombay nat. Hist. Soc. 58: 317. 1961; Ved Prakash & Kulkarni in Bull. Bot. Surv. India 21: 221. 1981; Ved Prakash & Jain in Fasc. Fl. India 14: 5, figs. 1–13. 1984. *C. ghatica* Naik in Reinwardtia 9: 393, f. 1. 1980 & Indian Forester 106: 732, f. 9. 1980.

Perennials, with long, creeping culms rooting at nodes 5–10 cm long, nodes hairy. Leaves 0.6–3.0 x 0.15–0.4 cm, lanceolate, hirsute on nerves above, glabrescent beneath, apex acute. Panicles effuse, 3–5 cm long. Spikelets globose, 0.1–0.13 cm long, on slender, 0.15–0.2 cm long pedicels; lower glume broadly ovate, upper glume ovate-oblong; lower lemma longer than upper lemma.

*Fls. & Frts.* : August–November.

*Illus.* : Naik, *op. cit.*; Ved Prakash & Jain, *op. cit.*

*Distrib.* : Rare in open, rocky, moist grasslands. Aurangabad; Satara; Sindhudurg.

*Notes* : It is endemic to Maharashtra.

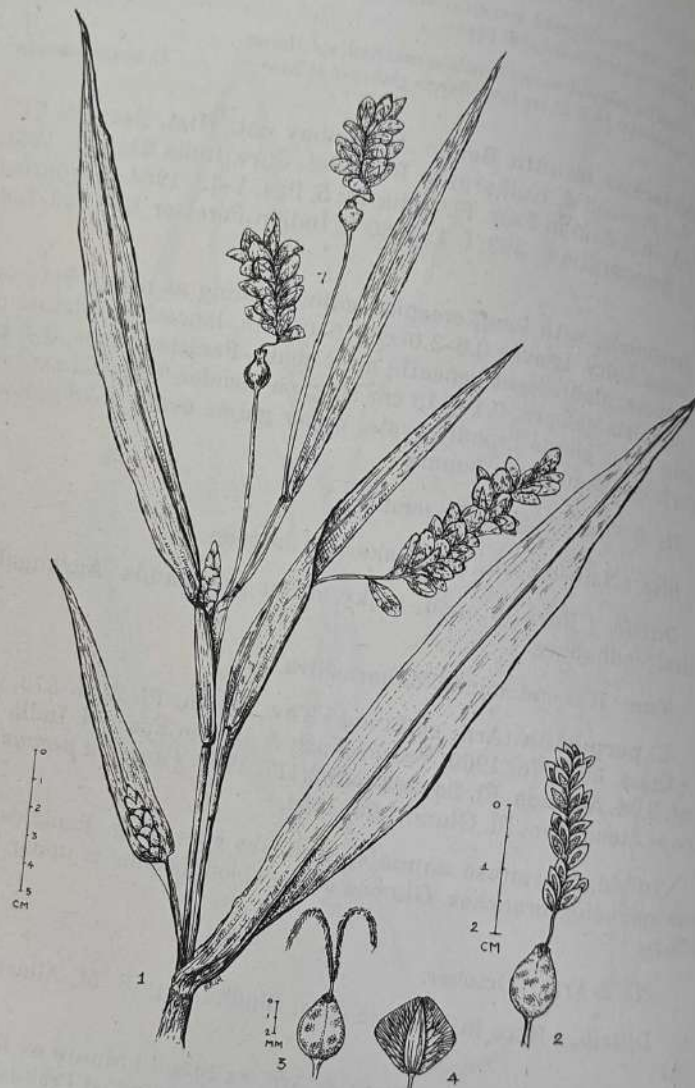
**C. perpusilla** (Arn. ex Steud.) Thw. Enum. Pl. Zeyl. 373. 1864; Bor, Grass. Ind. 576. 1960; Ved Prakash & Jain in Fasc. Fl. India 14: 5. 1984; S. M. Almeida, Fl. Savantwadi 2: 117. 1990. *Panicum perpusillum* Arn. ex Steud. Syn. Pl. Glum. 1: 96. 1854.

Tufted, caespitose annuals; branches spreading. Panicles open, with spreading branches. Glumes ovate-oblong; callus of upper lemma villous.

*Fls. & Frts.* : October.

*Distrib.* : Rare in lateritic soils. Sindhudurg (S. M. Almeida, *op. cit.*)

**C. simpliciuscula** (Wight & Arn. ex Steud.) Munro ex Bth. in J. Linn. Soc. 19: 93. 1881; Bor, Grass. Ind. 576. 1960; Ved Prakash & Jain in Fasc. Fl. India 14: 6. 1984. *Panicum simpliciusculum* Wight & Arn. ex Steud. Syn. Pl. Glum. 1: 96. 1854. *Coelachne pulchella sensu* Hook. f. Fl. Brit. India 7: 270. 1896 non R. Br. 1810. *C. pulchella* var. *simpliciuscula* (Wight & Arn. ex Steud.) Hook. f. *op. cit.* 271; Blatt. & McC. Bombay Grass. 200. 1935.



*Coix gigantea* Koen. ex Roxb.  
 1. Habit 2. Inflorescence (part) 3. Female spikelet 4. Male spikelet

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 decumbent-  
 scabrid on n  
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 Brit. I

Annuals or perennials, 15–20 cm long, delicate, erect or decumbent-ascending. Leaves 1.0–3.0 x 0.1–0.3 cm, linear-lanceolate, scabrid on nerves above, apex acute. Panicles interrupted, spiciform 2–5 cm long. Spikelets ovoid, 0.15–0.2 cm long; lower and upper glumes 0.05 cm or less long, suborbicular, persistent, membranous, subequal; lower lemma c 0.2 cm and upper lemma c 0.18 cm long, slightly puberulous or glabrous, longer than glumes.

Fls. & Frts. : October–April.

Illus. : Blatt. & McC. op. cit. t. 31; Bor, op. cit. 575, t. 61A; Matthew, Illus. Fl. Tamilnadu Carnatic 4: tt. 831 & 832. 1988.

Distrib. : Kolhapur; Ratnagiri; Sangli; Satara; Sindhudurg.

COIX L.

1. Lower glume of male spikelets narrowly or hardly winged ... *C. lacryma-jobi*
1. Lower glume of male spikelets broadly winged :
  2. Floating and creeping plants with succulent culms and floating roots at nodes; upper surface of the leaves densely covered with conspicuous glands which bear bristle-like hairs; ripe involucre abruptly constricted at neck into a beak ... *C. aquatica*
  2. Erect plants; upper surface of leaves without numerous conspicuous glands; involucre not abruptly constricted at neck into a beak ... *C. gigantea*

*Coix aquatica* Roxb. Fl. Ind. 3: 571.1832; Hook. f. Fl. Brit. India 7: 100.1896; Bor, Grass. Ind. 264.1960.

Annuals or perennials, 60–150 cm tall. Leaves 20–60 x 1.5–2.5 cm, linear-lanceolate, ensiform, long acuminate; ligule membranous. Spikes terminal and from exterior axils, peduncled, solitary or in pairs, drooping, many-flowered, 3–6 cm long. Male spikelets c 0.8 x 0.6 cm, ovate-lanceolate or broadly ovate, arranged in 6 longitudinal rows; female spikelets solitary at base of male spike.

Fls. & Frts. : October–February.

Illus. : Patunkar, Grass. Marathw. 125, f. 38. 1980.

Distrib. : Amaravati; Aurangabad; Kolhapur; Nagpur; Osmanabad; Parbhani; Ratnagiri; Sindhudurg.

*C. gigantea* Koen. ex Roxb. Fl. Ind. 3: 570. 1832; Bor, Grass. Ind. 264. 1960. *C. lacryma-jobi* var. *gigantea* (Roxb.) Stapf ex Hook. f. Fl. Brit. India 7: 100. 1896. 'Kachor'.

Herbs, annual, 1.5–2.0 m high, stilt-rooted. Leaves 2.0–3.5 cm broad, upper surface with a few conspicuous glands. Racemes 1–many, peduncles flat. Female spikelets solitary, c 0.5 cm long; males many, lanceolate, 0.8–1.5 cm long. Grains flat, broadly ovoid.

*Fls. & Frts.* : September–November.

*Illus.* : Lakshminarasimhan & Sharma, Fl. Nasik Dt. 541, t. 49, 1991.

*Distrib.* : Bhandara; Bombay; Buldhana; Chandrapur; Nasik; Pune; Ratnagiri.

*C. lacryma-jobi* L. Sp. Pl. 972. 1753; Hook. f. Fl. Brit. India 7: 100. 1896; Cooke, Fl. Pres. Bombay 3: 517. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 3. 1935; Bor, Grass. Ind. 264. 1960. 'Kasai', 'Kochura', 'Randawar', 'Ran-jondhala', 'Ran-mabai', 'Ran-maka'.

Herbs, annual, up to 1.5 m high, erect, rooting at lower nodes. Leaves 15–40 x 0.8–1.6 cm, linear-lanceolate. Racemes 1–many, peduncles flat. Female spikelets solitary, c 1 cm long; males c 1.2 cm long. Grains flat, reddish-brown.

*Fls. & Frts.* : August–January.

*Illus.* : Blatt. & McC. *op. cit.* t. 1; Ramam. in Sald. & Nicols. Fl. Hassan Dt. 702, f. 111 G. 1976; Matthew, *Illus. Fl. Tamilnadu Carnatic* 4: tt. 834 & 835. 1988.

*Distrib.* : Common throughout in standing waters and along banks of streams.

#### CYMBOPOGON Spr.

- |  |     |                     |
|--|-----|---------------------|
| 1. Lower glume of sessile spikelet with deep median groove from middle downwards, often corresponding to a keel inside; leaf-blades rounded to cordate at base | ... | <i>C. martinii</i>  |
| 1. Lower glume of sessile spikelets flat or concave on back; leaf blades narrow or attenuate at base :   |     |                     |
| 2. Lower glume of sessile spikelet flat, often wrinkled on back, with narrow to broad wings along keels  | ... | <i>C. flexuosus</i> |
| 2. Lower glume of sessile spikelet shallowly or deeply concave on back, wingless to narrowly winged  | ... | <i>C. gidarba</i>   |

*Cymbopogon flexuosus* (Nees ex Steud.) Wats. in Atkins. Gaz. N.W. Prov. Ind. 392. 1882; Bor, Grass. Ind. 127. 1960; Soenarko in Reinwardtia 9: 353, f. 39B. 1977. *Andropogon flexuosus* Nees ex Steud. Syn. Pl. Glum. 1: 388. 1854. *A. nardus* ssp. *flexuosus* (Nees) Hack. in

DC. Monogr. Phan. 6: 60  
*Cymbopogon travancoren*  
1954 & Grass. Ind. 132. 1

Tufted; culms c 2.5  
bearded. Leaves c 100.0  
often auricled; ligule c  
decompound; racemes 1  
c 0.45 cm long; pedicelle

*Illus.* : Soenarko, c

*Distrib.* : Rare. Bf

*C. gidarba* (Buc  
1924 [3: 1096. 1961 (B  
Reinwardtia 9: 316. 1  
139. 1985. *Andropogo*  
7: 208. 1896.

Culms 32–90 cm  
below, pubescent a  
spatheate, 6–30 cm  
spikelets. Sessile spi  
long.

*Fls. & Frts.* : A

*Distrib.* : Koll  
*op. cit.*).

*C. martinii*  
1882; Blatt. & Mo  
1960; Soenarko in  
Fl. Ind. 1: 280. 18  
India 7: 204. 1896.

Herbs, perei  
0.5–1.0 cm, line  
long, oblong; spi  
elliptic-oblong o

*Fls. & Frts.*

*Illus.* : Pat  
Fl. Tamilnadu

*Distrib.* : C

DC. Monogr. Phan. 6: 603. 1889; Hook. f. Fl. Brit. India 7: 207. 1896.  
*Cymbopogon travancorensis* Bor in J. Bombay nat. Hist. Soc. 52: 174.  
 1954 & Grass. Ind. 132. 1960.

Tufted; culms c 2.5 m high, terete, smooth, nodes often shortly bearded. Leaves c 100.0 x 1.5 cm, linear, scabrid and rough; leaf-sheath often auricled; ligule c 0.5 cm long, chartaceous. Panicles spatheate, decompound; racemes 1.5–1.7 cm long, often deflexed. Sessile spikelet c 0.45 cm long; pedicelled spikelet c 0.4 cm long.

*Illus.* : Soenarko, *op. cit.*

*Distrib.* : Rare. Bhandara.

**C. gidarba** (Buch.-Ham. ex Hook. f.) Haines, Bot. Bih. Or. 1048. 1924 [3: 1096. 1961 (Repr. ed.)]; Bor, Grass. Ind. 128. 1960; Soenarko in Reinwardtia 9: 316. 1977; Shah & Badrinath in J. Econ. Tax. Bot. 6: 139. 1985. *Andropogon gidarba* Buch.-Ham. ex Hook. f. Fl. Brit. India 7: 208. 1896.

Culms 32–90 cm high. Leaves 17–35 x 0.2–0.5 cm, flat, glabrous below, pubescent above; ligule c 0.1 cm long, truncate. Panicles spatheate, 6–30 cm long; racemes 2–3 cm long with 4–5 pairs of spikelets. Sessile spikelets c 0.45 cm long; pedicellate spikelets c 0.5 cm long.

*Fls. & Frts.* : August – October

*Distrib.* : Kolhapur (Salunkhe, 1995); Thane (Shah & Badrinath, *op. cit.*).

**C. martinii** (Roxb.) Wats. in Atkins. Gaz. N.W. Prov. Ind. 392. 1882; Blatt. & McC. Bombay Grass. 104. 1935; Bor, Grass. Ind. 129. 1960; Soenarko in Reinwardtia 9: 330. 1977. *Andropogon martinii* Roxb. Fl. Ind. 1: 280. 1820. *A. schoenanthus* L. var. *martinii* Hook. f. Fl. Brit. India 7: 204. 1896. 'Roshia'.

Herbs, perennial, up to 1 m high, erect, aromatic. Leaves 9–15 x 0.5–1.0 cm, linear-lanceolate or ovate-lanceolate. Panicles 13–15 cm long, oblong; spikes 1.5–3.0 cm long. Sessile spikelets c 0.4 cm long, elliptic-oblong or oblong, awned.

*Fls. & Frts.* : September–December.

*Illus.* : Patunkar, Grass. Marathw. 50, f. 13. 1980; Matthew, *Illus.* Fl. Tamilnadu Carnatic 4: tt. 836 & 837. 1988.

*Distrib.* : Common in all districts.



*Cymbopogon martinii* (Roxb.) Wats.

## CULTI

*C. citr*  
McC. Bomb  
Reinwardtia  
78. 1813. 'G

Herbs  
fascicles fr  
margins. F  
nodding. S  
long.

Distr  
Satara; Si

*C. n*  
Grass. In  
Andropog  
1896. 'Ga

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CULTIVATED SPECIES :

*C. citratus* (DC.) Stapf in Kew Bull. 1906: 357. 1906; Blatt. & McC. Bombay Grass. 103. 1935; Bor, Grass. Ind. 126. 1960; Soenarko in Reinwardtia 9: 351. 1977. *Andropogon citratus* DC. Cat. Hort. Monsp. 78. 1813. 'Gavatichaha'.

Herbs, perennial, tall. Leaves 50-80 x 0.8-1.0 cm, arising in dense fascicles from short, oblique rhizomes, glaucous green, rough along margins. Flowers in decoumpound, spatheate panicles, 30-60 cm long, nodding. Sessile spikelets c 0.6 cm long; pedicellate spikelets c 0.45 cm long.

*Distrib.* : Cultivated. Kolhapur; Nasik; Pune; Ratnagiri; Sangli; Satara; Sindhudurg; Thane.

*C. nardus* (L.) Rendle in Cat. Welw. Afr. Pl. 2: 155. 1899; Bor, Grass. Ind. 130. 1960; Soenarko in Reinwardtia 9: 349. 1977. *Andropogon nardus* L. Sp. Pl. 1046. 1753; Hook. f. Fl. Brit. India 7: 206. 1896. 'Gavatichaha'.

Perennials, tall, tufted; culms solid, pale polished; nodes glabrescent. Leaves lanceolate, acuminate, glaucous. Panicles pyramidal, often congested, drooping. Racemes 1.5-1.7 cm long. Sessile spikelet 0.4-0.45 cm long.

*Fls. & Frts.* : August-October.

*Distrib.* : Cultivated. Nagpur.

*C. winteranus* Jowitt in Ann. Roy. Bot. Gard. Peradeniya 4: 189. 1908; Bor, Grass. Ind. 132. 1960; Soenarko in Reinwardtia 9: 348. 1977.

Tufted perennials. Leaves c 16 cm long, base cordate, tapering towards apex. Panicles large, drooping. Sessile and pedicellate spikelets c 0.5 cm long.

*Fls. & Frts.* : November.

*Distrib.* : Cultivated in gardens. Satara.

CYNODON L. C. Rich. (nom. cons.)

- |   |     |                    |
|---|-----|--------------------|
| 1. Lemmas equal to, shorter or slightly longer than upper glume | ... | <i>C. barberi</i>  |
| 1. Lemmas longer than upper glume :                             |     |                    |
| 2. Spikes 2-6, up to 6 cm long; ligule a ring of white hairs    | ... | <i>C. dactylon</i> |
| 2. Spikes numerous and up to 10 cm long; ligule membranous      | ... | <i>C. radiatus</i> |

**Cynodon barberi** Rang. & Tad. in J. Bombay nat. Hist. Soc. 24: 846. 1916; Bor, Grass. Ind. 469. 1960.

Perennial creeping herbs; culms 25–40 cm high, rooting at nodes. Sheaths compressed, keeled, 1.0–2.5 cm long; ligule membranous, ciliate. Leaves 1.5–4.5 x 0.3–0.4 cm, linear-lanceolate, glabrous or sparsely hispid on upper surface, distantly scabrid on margins, acute at apex. Spikes 4–5, whorled, spreading, 3–5 cm long. Spikelets sessile, oblong, 0.23–0.25 cm long, laterally compressed, alternately 2-seriate, imbricate, 1-flowered. Grains oblong, 0.1–0.13 cm long.

*Fls. & Frts.* : August–November.

*Illus.* : Patunkar, Grass. Marathw. 220, f. 66. 1980.

*Distrib.* : Rare in sandy river beds. Kolhapur (Salunkhe, 1995); Nanded.

**C. dactylon** (L.) Pers. Syn. Pl. 1: 85. 1805; Hook. f. Fl. Brit. India 7: 288. 1896; Cooke, Fl. Pres. Bombay 3: 554. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 249. 1935; Bor, Grass. Ind. 469, f. 52. 1960; Jain in Bull. Bot. Surv. India 9: 139. (1967) 1968. *Panicum dactylon* L. Sp. Pl. 58. 1753. 'Darb', 'Durva', 'Harali'.

Perennials, weak; culms terete, 5–40 cm tall, ascending, rooting at nodes. Spikes 1.5–5.5 cm long. Spikelets c 0.2 cm long, sessile; lemmas silky pubescent on keels. Caryopsis obovoid, turgid.

*Fls. & Frts.* : Throughout the year.

*Illus.* : Blatt. & McC. *op. cit.* t. 166; Bor, *op. cit.*; Mahesh. *Illus. Fl. Delhi* f. 260. 1966; Matthew, *Illus. Fl. Tamilnadu Carnatic* 2: t. 838. 1982; Ugemuge, *Fl. Nagpur Dt.* t. 181. 1986.

*Distrib.* : Common throughout in grasslands.

**C. radiatus** Roth ex R. & S. Syst. Veg. 2: 411. 1817; Nowack in Blumea 36: 478. 1992. *C. arcuatus* J. S. ex C. B. Presl, Rel. Haenk. 1: 290. 1830; Bor, Grass. Ind. 469. 1960; Jain in Bull. Bot. Surv. India 9: 145. (1967) 1968.

Herbs, perennial; culms slender. Leaves flat, lanceolate, acuminate, margins scaberulous; sheaths slightly compressed; ligule membranous. Inflorescence of digitate spikes. Spikelets 0.15–0.2 cm long, 1-flowered, awnless, narrower; lemmas laterally compressed, acute, 3-nerved. Grains oblong, reddish-brown, with a faint dorsal groove.

*Fls. & Frts.* : August–November.

*Illus.* : J  
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*Illus.* : Jain, *op. cit.* 135, f. 26-36.

*Distrib.* : Rare in moist clayey soil. Amaravati; Bhandara; Chandrapur.

CYRTOCOCCUM Stapf

1. Pedicels short, rarely as long as spikelets :
  2. Leaves 2.5-6.0 cm long; spikelets hispidulous; branches of panicle glabrous ... *C. trigonum*
  2. Leaves more than 6 cm long; spikelets glabrous; branches of panicle often pilose ... *C. oxyphyllum*
1. Pedicels longer than spikelets :
  3. Spikelets 0.15-0.2 cm long; glumes not cuspidate ... *C. deccanense*
  3. Spikelets 0.15 cm long or less, if longer then glumes cuspidate :
    4. Panicles lax ... *C. accrescens*
    4. Panicles contracted ... *C. patens*

*Cyrtococcum accrescens* (Trin.) Stapf in Hook. Ic. Pl. subt. 3096.1922; Bor, Grass. Ind. 291. 1960; S.M. Almeida, Fl. Savantwadi 2: 119. 1990. *Panicum accrescens* Trin. Sp. Gram. Ic. 1: t. 88. 1828.

Perennials; culms terete, 15-40 cm long, rooting at lower nodes. Leaves asymmetrical at base. Panicles spreading. Spikelets brown; pedicels long. Grains obovoid.

*Fls. & Frts.* : September-October.

*Illus.* : Stapf in Hook., *op. cit.*

*Distrib.* : A few in moist shady forests. Sindhudurg (S.M. Almeida, *op. cit.*).

*C. deccanense* Bor in Kew Bull. 1956: 255. 1956 & Grass. Ind. 291. 1960; S. M. Almeida, Fl. Savantwadi 2: 119. 1990.

Annual herbs; culms 15-50 cm long, creeping or decumbent. Leaves elliptic-lanceolate; sheaths glabrous or sparsely hairy; ligule membranous. Panicles 2-15 cm long, lax. Spikelets ovoid or obovoid.

*Fls. & Frts.* : August-December.

*Distrib.* : Rare in damp places and in densely shady forest beds. Sindhudurg (S.M. Almeida, *op. cit.*).

*Notes.* : This species is allied to *C. patens* from which Bor has separated it due to its larger florets (1.7–2 mm). According to Bor it also has a restricted distribution.

**C. oxyphyllum** (Steud.) Stapf in Hook. Ic. Pl. subt. 3096. 1922; Bor, Grass. Ind. 291. 1960. *Panicum oxyphyllum* Steud. Syn. Pl. Glum. 1: 65. 1854. *P. pilipes* Nees & Arn. ex Buese in Miq. Pl. Jungh. 3: 376. 1854; Hook. f. Fl. Brit. India 7: 57. 1896. *Cyrtococcum pilipes* A. Camus in Bull. Mus. Nat. 27: 118. 1921; Blatt. & McC. Bombay Grass. 169. 1935.

Perennials, 30–50 cm long; culms geniculately ascending, rooting at nodes. Leaves 5–10 x 0.6–1.5 cm, lanceolate, glabrous above, puberulous beneath, apex acute. Panicles contracted, 4–7 cm long, branches remote. Spikelets c 0.15 cm long, ovoid, shortly pedicelled; lower glume about 1/2 the length of lower lemma, obtuse; lower lemma 5-nerved, ovate, upper lemma slightly shorter than lower.

*Fls. & Frts.* : September–October.

*Illus.* : Blatt. & McC. *op. cit.* t. 110; Gilliland, Fl. Malaya 3: facing p. 148, t. 6. 1971; Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 742. 1988.

*Distrib.* : Bombay (Blatt. & McC. *op. cit.*); Kolhapur; Pune; Raigad; Ratnagiri; Satara; Sindhudurg.

**C. patens** (L.) A. Camus in Bull. Mus. Hist. Nat. Paris 27: 118. 1921; Blatt. & McC. Bombay Grass. 170. 1935; Bor, Grass. Ind. 292. 1960. *Panicum patens* L. Sp. Pl. 58. 1753; Hook. f. Fl. Brit. India 7: 57. 1896; Cooke, Fl. Pres. Bombay 3: 455. 1958 (Repr. ed.).

Perennials, decumbent, ascending; culms slender, 30–60 cm long, rooting below. Panicles 4–6 cm long, branches slender. Spikelets c 0.15 cm long; lower glume elliptic-oblong, brown; upper glume elliptic.

*Fls. & Frts.* : September–December.

*Illus.* : Gilliland, Fl. Malaya 3: facing p. 149, t. 7. 1971.

*Distrib.* : Kolhapur; Ratnagiri; Sindhudurg.

**C. trigonum** (Retz.) A. Camus in Bull. Mus. Hist. Nat. Paris 27: 118. 1921; Blatt. & McC. Bombay Grass. 169. 1935; Bor, Grass. Ind. 292. 1960. *Panicum trigonum* Retz. Obs. Bot. 3: 9. 1783; Hook. f. Fl. Brit. India 7: 56. 1896.

Perennials, trailing; culms decumbent, branching, interlaced below, branches erect. Leaves 2.5–5.0 cm long, linear-lanceolate.

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Panicles 2.5–4.0 cm long, contracted. Spikelets c 0.15 cm long, elliptic, shortly pedicelled, glumes and lemmas dissimilar; lower glume 1/2 the length of lemmas, 3-nerved, pale-brown, so also upper one; lower lemma 5-nerved, pale brown, upper naked or bearded at tip.

Fls. & Frts. : August–November.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 4:tt.839&840. 1988.

Distrib. : Rare in hilly forests. Raigad; Ratnagiri; Sindhudurg.

Notes : Cooke (3: 456) excluded *Panicum trigonum* Retz. for lack of any evidence regarding its existence in the Bombay Presidency. However, Blatter & McCann (1928) confirmed the occurrence of this species on the basis of specimens collected at Matheran, Raigad District. Later, this has been collected from Ratnagiri and Sindhudurg also.

#### DACTYLOCTENIUM Willd.

- |  |     |                     |
|--|-----|---------------------|
| 1. Perennials  | ... | <i>D. scindicum</i> |
| 1. Annuals :   |     |                     |
| 2. Stoloniferous; spikes 2–5 cm long; tip of rhachis shortly produced, up to 0.2 cm long | ... | <i>D. aegyptium</i> |
| 2. Not stoloniferous; spikes 1.5–2.0 cm long; tip of rhachis up to 0.4 cm long           | ... | <i>D. aristatum</i> |

**Dactyloctenium aegyptium** (L.) Willd. Enum. Pl. Hort. Berol. 1029. 1809; Blatt. & McC. Bombay Grass. 262. 1935; Bor, Grass. Ind. 489. 1960. *Cynosurus aegyptius* (L.) Desf. Fl. Atlant. 1: 85. 1798; Hook. f. Fl. Brit. India 7: 295. 1896; Cooke, Fl. Pres. Bombay 3: 560. 1958 (Repr. ed.).

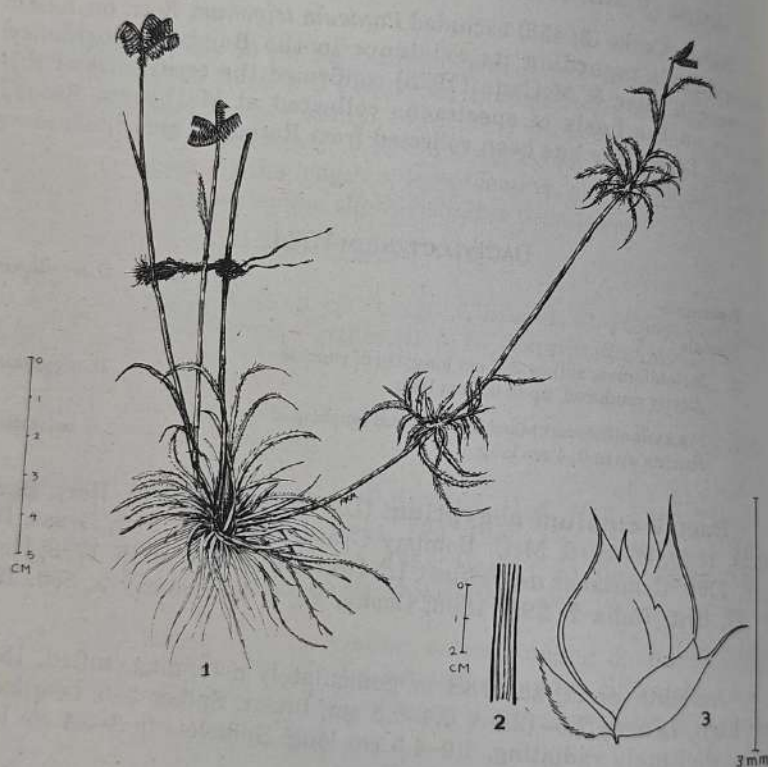
Annuals, erect, suberect or geniculately ascending, tufted, 15–45 cm high. Leaves 2.5–12.0 x 0.1–0.5 cm, linear. Spikes 2–6, bearded at base, digitately radiating, 1.0–4.5 cm long. Spikelets 0.3–0.4 cm long. Grains subglobose, red, strongly rugose.

Fls. & Frts. : August–February.

Illus. : Blatt. & McC. *op. cit.* t. 176; Bor, *op. cit.* 490, f. 54; Mahesh. Illus. Fl. Delhi f. 263. 1966; Matthew, Illus. Fl. Tamilnadu Carnatic 2: tt. 841 & 842. 1982; Ugemuge, Fl. Nagpur Dt. t. 182. 1986.

Distrib. : Common throughout.

**D. aristatum** Link, Hort. Berol. 1: 59. 1827; Bor, Grass. Ind. 489. 1960; Raju *et al.* in J. Econ. Tax. Bot. 8: 246. 1986.



*Dactyloctenium scindicum* Boiss.  
1. Habit 2. Rachis 3. Spikelet

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Herbs, annual; culms terete, 3–8 cm long. Leaves 3–5 x 0.2–0.4 cm, linear-lanceolate, acute or pungent at apex. Spikes solitary, 1.25–2.0 cm long, terminal. Spikelets sessile, laterally compressed. Grains globose, rugose.

*Fls. & Frts.* : July–October.

*Illus.* : Patunkar, Grass. Marathw. 234, f. 72. 1980.

*Distrib.* : Rare. Aurangabad; Kolhapur; Ratnagiri; Sangli; Satara.

**D. scindicum** Boiss. Diagn. 2, 4: 131. 1859; Blatt. & McC. Bombay Grass. 264. 1935; Bor, Grass. Ind. 489. 1960. *Eleusine aristata* Ehrenb. ex Boiss. Fl. Orient. 5: 557. 1881; Cooke, Fl. Pres. Bombay 3: 561. 1958 (Repr. ed.).

Prostrate annual, 15–30 cm long. Leaves 2.5–10.0 x 0.15–0.25 cm, acuminate or pungent, sparsely hairy, margins ciliate with bulbous based hairs; sheaths glabrous or sparsely hairy; ligule obsolete. Spikes 3 or more, 0.6–1.0 cm long. Spikelets c 0.4 cm long. Grains ovoid, rugose.

*Distrib.* : Bombay; Buldhana; Ratnagiri (Cooke, *op. cit.*); Thane.

#### CULTIVATED SPECIES :

**D. australe** Steud. Syn. Pl. Glum. 1: 212. 1854; Bor, Grass. Ind. 489. 1960.

Perennials, stoloniferous.

*Distrib.* : Cultivated. Bombay.

*Notes* : It is a native of S. Africa. It is an excellent sand-binder and forms a good sward. It can stand shade to some extent.

#### DANTHONIDIUM C. E. Hubb.

**Danthonidium gammiei** (Bhide) C. E. Hubb. in Hook. Ic. Pl. Subt. 3331. 1937; Bor, Grass. Ind. 479. 1960. *Danthonia gammiei* Bhide in J. Proc. Asiat. Soc. Bengal (N. S.) 7: 513, t. 6. 1912; Blatt. & McC. Bombay Grass. 200. 1935.

Annuals, tufted, 10–30 cm tall; culms furrowed, nodes glabrous. Leaves 4–8 x 0.3–0.4 cm, linear. Racemes terminal, solitary. Spikelets 3.0–3.5 cm long, awned; lower glume 1.6–2.0 cm long, awned, glabrous, 3–5 nerved; upper glume 1.3–1.5 cm long, awned, 3-nerved; lower lemmac 0.3 cm long, oblong, 3-awned, central one longer than two on either side, with line of hairs below awns.

*Fls. & Frts.* : September–October.



*Dendrocalamus strictus* (Roxb.) Nees  
1. Culm 2. Culm sheath 3. Panicle (part)

*Illus.* : Bhide, *op. cit.* ; Bor, *op. cit.* 480, f. 53.  
*Distrib.* : Bombay; Ratnagiri; Sindhudurg; Thane.

## DENDROCALAMUS Nees

*Dendrocalamus strictus* (Roxb.) Nees in *Linnaea* 9: 476. 1834; Gamble in Hook. f. *Fl. Brit. India* 7: 404. 1896 & *Ann. Roy. Bot. Gard. Calcutta* 7: 78. 1896; Cooke, *Fl. Pres. Bombay* 3: 572. 1958 (*Repr. ed.*); Blatt. & McC. *Bombay Grass*. 285. 1935; Holtt. in *Gard. Bull. Singapore* 16: 98. 1958. *Bambos stricta* Roxb. *Pl. Cor.* 1: 58, t. 80. 1795. '*Kania bans*', '*Manvel*', '*Mes*', '*Velu*'.

Culms 6–15 m tall, solid, tufted. Leaves 4.5–12.5 x 0.5–1.5 cm, linear-lanceolate or ovate-lanceolate. Heads 1.5–3.5 cm in diam. Spikelets 0.8–1.0 cm long, hairy, spinescent. Caryopsis c 0.7 cm long, ovoid to subglobose, brown, beaked with persistent style bases.

*Fls. & Frts.* : October–March.

*Illus.* : Matthew, Further *Illus. Fl. Tamilnadu Carnatic* 4: t. 743. 1988.

*Distrib.* : Common in all districts.

## CULTIVATED SPECIES :

*D. giganteus* Munro in *Trans. Linn. Soc.* 26: 150. 1868; Gamble in Hook. f. *Fl. Brit. India* 7: 406. 1896; Cooke, *Fl. Pres. Bombay* 3: 573. 1958 (*Repr. ed.*); Blatt. & McC. *Bombay Grass*. 286. 1935.

Shrubs, arborescent, 15–30 m tall; culms branched above, nodes hairy; stem-sheaths large, deciduous, golden hairy. Leaves oblong, cuspidately acuminate, tips twisted, hairy beneath when young. Panicles large, branchlets slender, curved. Spikelets c 1.2 cm long, ovoid, acute, spinescent, puberulous; glumes ovate, mucronate; lemmas 3–6, thin, many nerved. Grains oblong, hairy above.

*Fls. & Frts.* : October–November / March–April.

*Distrib.* : Cultivated in gardens. Bombay; Kolhapur; Pune.

## DESMOSTACHYA Stapf

*Desmostachya bipinnata* (L.) Stapf in *Dyer, Fl. Cap.* 7: 632. 1900; Blatt. & McC. *Bombay Grass*. 244. 1935; Bor, *Grass. Ind.* 491. 1960. *Briza bipinnata* L. *Syst. Nat. ed.* 10. 2: 875. 1759. *Eragrostis cynosuroides* (Retz.) P. Beauv. *Ess. Agrost.* 71, 162. 1812; Hook. f. *Fl.*

Brit. India 7: 324. 1896; Cooke, Fl. Pres. Bombay 3: 550. 1958 (Repr. ed.). 'Darbha', 'Kusha'.

Herbs, perennial, tufted, 30–35 cm high. Leaves 5.5–28.0 x 0.1–0.3 cm, linear, flat. Panicles 9–13 cm long. Spikelets sessile, 2-seriate and crowded, narrowly ovate to linear-oblong, brownish-violet, c 0.3 cm long. Grains obliquely ovoid, obscurely trigonous.

Fls. & Frts. : July–October.

Illus. : Blatt. & McC. *op. cit.* t. 162; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 843. 1983.

Distrib. : Bombay; Chandrapur; Nagpur; Nasik; Thane.

#### DICHANTHIUM Willd.

Note : Intergeneric hybridization has been found to occur and fertile hybrids have been produced between the genera *Dichanthium* Willd., *Capillipedium* Stapf, *Indochloa* Bor p. p., *Eremopogon* Stapf and *Bothriochloa* O. Ktze. Hence, de Wet & Harlan (*Amer. J. Bot.* 53: 97. 1966 & *Taxon* 19: 339–340. 1970) have merged them. The generic epithet, *Dichanthium* is applicable to the composite genus as it was the earliest.

1. Joints and pedicels solid, not grooved; racemes digitate or subdigitate, not paniced :
  2. Raceme solitary :
    3. Sessile spikelets imbricate; rhizomes not woolly ... *D. oliganthum*
    3. Sessile spikelets not overlapping; rhizomes woolly :
      4. Lower glume pitted, nerves smooth ... *D. foveolatum*
      4. Lower glume not pitted, nerves tuberculate ... *D. tuberculatum*
  2. Racemes 2–many :
    5. Lower glume of sessile spikelets not pitted; lower glume of pedicelled spikelets armed with bulbous based hairs :
      6. Lower glume of sessile spikelets oblong; pedicels slightly shorter than half of sessile spikelets ... *D. annulatum*
      6. Lower glume of sessile spikelets obovate; pedicels longer than half of sessile spikelets ... *D. caricosum*
    5. Lower glume of sessile or of pedicelled or of both spikelets pitted; if both spikelets not pitted then margins of lower glume of pedicelled spikelets armed with bulbous based bristles :
      7. Lower glume of both sessile and pedicelled spikelets not pitted ... *D. maccannii*

FLO

7. Lower glume of either sessile spikelets pitted
8. Lower glume of spikelets pitted
8. Lower glume of
1. Joints and pedicels with then racemes in panicle
9. Branches of panicle near apex only :
10. Sessile spike
11. Callus or linear at least
11. Callus lanceolate or slightly
10. Sessile spike
12. Leaf spike
12. Leaf low D. l
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7. Lower glume of either both spikelets or only sessile spikelets pitted :
  8. Lower glume of sessile and pedicelled spikelets pitted ... *D. panchganiensis*
  8. Lower glume of only sessile spikelets pitted ... *D. armatum*
1. Joints and pedicels with a translucent groove, if not grooved then racemes in panicles :
  9. Branches of panicles capillary, bearing a few spikelets near apex only :
    10. Sessile spikelets shorter than pedicelled spikelets :
      11. Callus shortly bearded; sessile spikelets oblong or linear-oblong, truncate; pedicelled spikelets at least 0.05–0.1 cm longer than sessile ... *D. assimile*
      11. Callus densely bearded; sessile spikelets oblong-lanceolate, obtuse; pedicelled spikelets equal to or slightly longer than sessile ... *D. filiculme*
    10. Sessile spikelets as long as pedicelled spikelets :
      12. Leaves rounded at base, lower glume of sessile spikelets channelled ... *D. parviflorum*
      12. Leaves tapering to base, sometimes petioled; lower glume of sessile spikelets not channelled ... *D. huegelii*
  9. Branches of panicles stout, bearing a number of spikelets from a little above base to apex :
    13. Lower racemes shorter than main rhachis :
      14. Plants aromatic; joints and pedicels densely silky hairy ... *D. odoratum*
      14. Plants not aromatic; joints and pedicels not very silky ... *D. glabrum*
    13. Lower racemes longer than main rhachis :
      15. Joints and pedicels terete, if grooved, groove not translucent :
        16. Sessile spikelets 0.3–0.4 cm long; anthers c 0.2 cm long; pedicelled spikelets 0.4–0.5 cm long; lower glume of pedicelled spikelets c 9-nerved ... *D. concanensis*
        16. Sessile spikelets 0.45–0.625 cm long; anthers 0.3–0.375 cm long; pedicelled spikelets 0.55–0.9 cm long; lower glume of pedicelled spikelets 15–10-nerved ... *D. jainii*
      15. Joints and pedicels with a translucent groove :
        17. Leaves distichous ... *D. compressum*

## 17. Leaves not distichous :

18. Lower glume of sessile spikelets pitted;  
pedicelled spikelets pitted or not :19. Lower glume of sessile spikelets hairy below middle;  
lower glume of pedicelled spikelets 0-1-pitted19. Lower glume of sessile spikelets glabrous;  
glume of pedicelled spikelets 2-3(-4)-pitted18. Lower glume of sessile spikelets pitted or  
not; pedicelled spikelets not pitted :

20. Lower glume of sessile spikelets glabrous

20. Lower glume of sessile spikelets hairy  
below middle... *D. pertusum*... *D. insculptum*... *D. kuntzeana*... *D. woodrowii*

**Dichanthium annulatum** (Forssk.) Stapf in Prain, Fl. Trop. Afr. 9: 178. 1917; Blatt. & McC. Bombay Grass. 94. 1935; Bor, Grass. Ind. 133. 1960; Deshpande in Fasc. Fl. India 15: 5. 1984. *Andropogon annulatus* Forssk. Fl. Aegypt.-Arab. 173. 1775; Hook. f. Fl. Brit. India 7: 196. 1896; Cooke, Fl. Pres. Bombay 3: 508. 1958 (Repr. ed.). 'Jinjua', 'Marvel', 'Paunava'.

Herbs, perennial, densely tufted c 1 m high. Leaves 7-17 x 0.3-0.4 cm, linear, finely acuminate. Racemes 2-9, 2.5-6.5 cm long. Sessile spikelets 0.3-0.4 cm long, narrowly oblong; pedicelled as long as sessile.

*Fls. & Frts.* : October-March.

*Illus.* : Blatt. & McC. *op. cit.* t. 62; Mahesh. *Illus. Fl. Delhi* f. 268. 1966; Matthew, *Illus. Fl. Tamilnadu Carnatic* 2: tt. 844 & 845. 1982; Ugemuge, *Fl. Nagpur Dt.* t. 183. 1986.

*Distrib.* : Common throughout in bunds of cultivated fields and open grasslands.

**D. armatum** (Hook. f.) Blatt. & McC. in J. Bombay nat. Hist. Soc. 32: 425. 1928 & Bombay Grass. 91. 1935; Bor, Grass. Ind. 134. 1960; Deshpande in Fasc. Fl. India 5: 6. 1984. *Andropogon armatus* Hook. f. Fl. Brit. India 7: 197. 1896; Cooke, Fl. Pres. Bombay 3: 507. 1958 (Repr. ed.).

Herbs, annual; culms 30-45 cm long, erect, tufted, nodes bearded. Leaves linear, bulbous hairy on both surfaces. Racemes 2-5, flexuous. Sessile spikelets c 0.3 cm long; callus bearded; pedicelled spikelets slightly longer than sessile ones but narrower.

*Fls. & Frts.* : September-October.

*Illus.* : Blatt. & McC. Bombay Grass. t. 57. 1935.

*Distrib.* : Ahn  
(Blatt. & McC. *op. c*

**D. assimile**  
*Andropogon assimile*  
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Bombay 3: 501. 1  
Camus in Lecom  
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sessile spikelet  
oblong, truncate  
lanceolate; lowe

*Fls. & Frts.*

*Illus.* : Bla

*Distrib.* :  
Satara; Sindhu

**D. caric**  
549. 1921; Bla  
1960; Deshp  
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Pres. Bomba  
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*Distrib.* : Ahmednagar; Bhandara; Nasik; Pune; Thane; Satara (Blatt. & McC. *op. cit.*).

**D. assimile** (Steud.) Deshpande in Fasc. Fl. India 15: 6.1984. *Andropogon assimilis* Steud. in Zoll. Verz. 58. 1854 & in Syn. Pl. Glum. 1: 397. 1854; Hook. f. Fl. Brit. India 7: 179. 1896; Cooke, Fl. Pres. Bombay 3: 501. 1958 (Repr. ed.). *Capillipedium assimile* (Steud.) A. Camus in Lecomte, Fl. Gen. Indo-Chine 7: 314. 1922; Blatt. & McC. Bombay Grass. 80. 1935; Bor, Grass. Ind. 110. 1960.

Herbs, perennial, suffruticose, decumbent; culms 30–60 cm tall, hard, smooth, nodes glabrous or rarely bearded. Leaves linear-lanceolate. Panicles lax, 6–8 cm long. Spikelets distant, pale-green; sessile spikelets c 0.25 cm long, ovoid-oblong; lower glume ovate-oblong, truncate, obscurely 4–6-nerved, upper glume as long as lower, lanceolate; lower lemma linear; pedicelled spikelets c 0.4 cm long.

*Fls. & Frts.* : September–December.

*Illus.* : Blatt. & McC. *op. cit.* t. 51; Deshpande, *op. cit.* 8, ff. 5 & 6.

*Distrib.* : Amaravati; Bombay; Dhule; Kolhapur; Pune; Ratnagiri; Satara; Sindhudurg.

**D. caricosum** (L.) A. Camus in Bull. Mus. Hist. Nat. Paris 27: 549. 1921; Blatt. & McC. Bombay Grass. 92. 1935; Bor, Grass. Ind. 134. 1960; Deshpande in Fasc. Fl. India 15: 7. 1984. *Andropogon caricosus* L. Sp. Pl. ed. 2. 1480. 1763; Hook. f. Fl. Brit. India 7: 196. 1896; Cooke, Fl. Pres. Bombay 3: 507. 1958 (Repr. ed.). *Dichanthium aristatum* (Poir.) C.E. Hubb. in Kew Bull. 1939: 654. 1939; Bor, *op. cit.* 134. 'Jetare', 'Marvel'.

Herbs, perennial; culms 30–200 cm tall, tufted, nodes glabrous or bearded. Leaves 5–15 x 0.1–0.2 cm, narrowly linear, glabrous or sparsely hairy. Racemes 1–6, 3.5–5.5 cm long. Sessile spikelets 0.3–0.5 cm long; pedicelled spikelets nearly as long as sessile.

*Fls. & Frts.* : September–December.

*Illus.* : Blatt. & McC. *op. cit.* t. 61; Patunkar, Grass. Marathw. 52, f. 14. 1980 (*Dichanthium aristatum*); Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: tt. 744 & 745. 1988.

*Distrib.* : Common throughout along margins and bunds of fields, river banks and open grasslands.

**D. compressum** (Hook. f.) Jain & Deshpande in Bull. Bot. Surv. India 20: 133. (1978) 1979; Deshpande in Fasc. Fl. India 15: 10. 1984. *Andropogon compressus* Hook. f. Fl. Brit. India 7: 172. 1896; Cooke, Fl.

Pres. Bombay 3: 496. 1958 (Repr. ed.). *Amphilophis compressa* (Hook. f.) Blatt. & McC. Bombay Grass. 83. 1935. *Bothriochloa compressa* (Hook. f.) Henr. in Blumea 3: 456. 1940; Bor, Grass. Ind. 106. 1960. *ensiformis* (Hook. f.) Henr. op. cit. 457; Bor, op. cit. 107.

Perennials, stout; culms 90–120 cm tall, erect, branched. Leaves 20–40 x 0.6–1.0 cm, linear, finely acuminate, flat, scaberulous on margins and on surfaces; sheaths keeled. Spikelets c 0.4 cm long, ovoid-lanceolate, paired in 10–13 cm long panicles of corymbose racemes. Caryopsis oblong.

Fls. & Frts. : October–November.

Illus. : Blatt. & McC. op. cit. t.53.

Distrib. : Bombay; Pune.

**D. concanensis** (Hook. f.) Jain & Deshpande in Bull. Bot. Surv. India 20: 134. (1978) 1979; Deshpande in Fasc. Fl. India 15: 11. 1984. *Andropogon concanensis* Hook. f. Fl. Brit. India 7: 174. 1896; Cooke, Fl. Pres. Bombay 3: 499. 1958 (Repr. ed.). *Amphilophis concanensis* (Hook. f.) Blatt. & McC. in J. Bombay nat. Hist. Soc. 32: 422. 1928 & Bombay Grass. 87. 1935. *Bothriochloa concanensis* (Hook. f.) Henr. in Blumea 3: 457. 1940; Bor, Grass. Ind. 106. 1960.

Perennials; culms 50–60 cm high. Leaves 20–25 x 0.2–0.33 cm, linear, finely acuminate, smooth on both sides. Racemes 5–8. Sessile spikelets ovoid-lanceolate, narrowly truncate; pedicelled spikelets as long as or slightly longer and narrower than sessile ones.

Fls. & Frts. : October.

Illus. : Blatt. & McC. op. cit. t.56.

Distrib. : Ahmednagar; Nasik; Pune; Raigad; Satara; Thane.

**D. filiculme** (Hook. f.) Jain & Deshpande in Bull. Bot. Surv. India 20: 134. (1978) 1979; Deshpande in Fasc. Fl. India 15: 12. 1984. *Andropogon filiculmis* Hook. f. Fl. Brit. India 7: 181. 1896; Cooke, Fl. Pres. Bombay 3: 502. 1958 (Repr. ed.). *Capillipedium filiculme* (Hook. f.) Stapf in Hook. Ic. Pl. subt. 3085. 1922; Blatt. & McC. Bombay Grass. 82. 1935; Bor, Grass. Ind. 111. 1960.

Annuals; culms 30–60 cm tall, copiously geniculate, branched, nodes bearded. Leaves 3–20 x 0.8–1.2 cm, linear-lanceolate, finely acuminate. Spikelets 2–3; sessile spikelets oblong-lanceolate; pedicelled spikelets narrower than sessile ones.

Fls. & Frts. : September–December.

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*Illus.* : Patunkar, Grass. Marathw. 45, f. 11. 1980 (*Capillipedium filiculme*).

*Distrib.* : Amaravati; Aurangabad; Bombay; Kolhapur; Nanded; Nasik (Blatt. & McC. *op. cit.*); Parbhani; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

**D. foveolatum** (Del.) Roberty in Boissiera 9: 170. 1960; T.A. Cope in Kew Bull. 35: 703. 1980. *Andropogon foveolatus* Del. Fl. d'Egypte 16, t. 8, f. 2. 1812; Hook. f. Fl. Brit. India 7: 168. 1896; Cooke, Fl. Pres. Bombay 3: 496. 1958 (Repr. ed.). *Eremopogon foveolatus* (Del.) Stapf in Prain, Fl. Trop. Afr. 9: 183. 1917; Blatt. & McC. Bombay Grass. 96. 1935; Bor, Grass. Ind. 148. 1960. 'Ghandel', 'Marvel'.

Herbs, c 60 cm high, tufted, erect or geniculate. Leaves 4–18 cm long, narrowly linear; mouth of sheaths ciliate, silky; ligule truncate, short. Inflorescence terminal. Sessile spikelets 0.3–0.4 cm long, oblong-lanceolate, lower glume dorsally pitted; pedicelled pitted or not.

*Fls. & Frts.* : September–December.

*Illus.* : Blatt. & McC. *op. cit.* t. 64; Mahesh. *Illus.* Fl. Delhi f. 232. 1966; Patunkar, Grass. Marathw. 57, f. 16. 1980; Matthew, *Illus.* Fl. Tamilnadu Carnatic 2: tt. 866 & 867. 1982; Ugemuge, Fl. Nagpur Dt. t. 187. 1986. (*Eremopogon foveolatus*).

*Distrib.* : Common in all districts.

**D. glabrum** (Roxb.) Jain & Deshpande in Bull. Bot. Surv. India 20: 134. (1978) 1979; Deshpande in Fasc. Fl. India 15: 13. 1984. *Andropogon glaber* Roxb. Fl. Ind. 1: 271. 1820. *A. intermedius* R. Br. Prodr. 202. 1810; Hook. f. Fl. Brit. India 7: 175. 1897; Cooke, Fl. Pres. Bombay 3: 500. 1958 (Repr. ed.). *Amphilophis glabra* (Roxb.) Stapf in Prain, Fl. Trop. Afr. 9: 172. 1917; Blatt. & McC. Bombay Grass. 87. 1935. *Bothriochloa glabra* (Roxb.) A. Camus in Ann. Soc. Linn. Lyon 1930, n. s. 76: 164. 1931; Bor, Grass. Ind. 107. 1960. *B. intermedia* (R. Br.) A. Camus *op. cit.*; Bor, *op. cit.* 108.

Perennials, c 1.5 m tall; culms terete; nodes with a ring of soft spreading white hairs. Leaves 10–50 x 0.5–1.0 cm, linear, setose at base, acute. Panicles dense, terminal. Sessile spikelets 0.33–0.43 cm long; pedicelled spikelets linear-oblong or lanceolate with lower glumes pitted.

*Fls. & Frts.* : September–January.

*Illus.* : Deshpande & Singh, Grass. Maharashtra 47, t. 5, f. 3. 1986.

*Distrib.* : Aurangabad; Bhandara; Chandrapur; Nagpur; Nanded; Osmanabad; Parbhani; Pune; Raigad (Blatt. & McC. *op. cit.*); Thane.

**D. huegelii** (Hack.) Jain & Deshpande in Bull. Bot. Surv. India 20:135. (1978) 1979; Deshpande in Fasc. Fl. India 15: 15. 1984. *Andropogon huegelii* Hack. in DC. Monogr. Phan. 6: 492. 1889; Hook. f. Fl. Brit. India 7: 180. 1896; Cooke, Fl. Pres. Bombay 3: 501. 1958 (Repr. ed.). *A. schmidii* Hook. f. *op. cit.* *Capillipedium huegelii* (Hack.) Stapf in Hook. Ic. Pl. subt. 3085. 1922; Blatt. & McC. Bombay Grass. 81. 1935; Bor, Grass. Ind. 111. 1960. *Andropogon huegelii* var. *foetidus* Lisboa, Bombay Grass. 73. 1896. *Capillipedium foetidum* (Lisboa) Raiz. & Jain in Indian Forester 77: 752. 1951. 'Kavla-Sippe', 'Kullus', 'Padra', 'Podam', 'Sandhiligoat', 'Tam'.

Herbs, perennial, c 1 m high; culms slender, simple or branched, nodes densely bearded. Leaves 4–20 x 0.2–1.2 cm, linear-lanceolate, margins shortly ciliate. Panicles 8–15 cm long. Spikelets yellowish-white or green. Sessile and pedicelled spikelets c 0.3 cm long.

*Fls. & Frts.* : July–December.

*Illus.* : Blatt. & McC. *op. cit.* t. 52.

*Distrib.* : Ahmednagar; Akola; Amaravati; Bombay; Dhule; Jalgaon; Nasik; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane; Yavatmal.

**D. insculptum** (Hochst. ex A. Rich.) W. D. Clayton in Kew Bull. 32: 3. 1977; Deshpande in Fasc. Fl. India 15: 15. 1984. *Andropogon insculptus* Hochst. ex A. Rich. Tent. Fl. Abyss. 2: 458. 1851. *A. pertusus* Willd. var. *insculptus* (Hochst. ex A. Rich.) Hook. f. Fl. Brit. India 7: 174. 1896. *Bothriochloa insculpta* (Hochst. ex A. Rich.) A. Camus in Ann. Soc. Linn. Lyon 1930, n. s. 76: 165. 1931; Bor, Grass. Ind. 107. 1960.

Herbs, 1.0–1.5 m tall; culms ascending, terete, nodes densely bearded. Leaves 10–30 x 0.3–0.8 cm, narrowly linear. Racemes 1–4, 3–7 cm long, corymbosely fasciculate, purplish or pale-green, slender, silky. Sessile spikelets 0.4–0.5 cm long, linear-lanceolate, callus bearded; pedicelled spikelets c 0.5 cm long, narrower, ovoid.

*Fls. & Frts.* : October–December.

*Illus.* : Deshpande, *op. cit.* 18, f. 27–28.

*Distrib.* : Rare. Osmanabad.

**D. jainii** (Deshpande & Hemadri) Deshpande in Bull. Bot. Surv. India 21: 198. (1979) 1981 & in Fasc. Fl. India 15: 17. 1984.

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*Bothriochloa jainii* Deshpande & Hemadri in Indian Forester 97: 593, f. 19. 1971.

Perennials, c 2 m tall, tufted; nodes 5-8, bearded. Leaves 30-65 x 0.8-1.5 cm, acuminate, margins spinulose, bulbous hairy on both surfaces. Inflorescence a panicle of racemes on short main axis; racemes 3-15, 5-10 cm long, greenish or purple. Spikelets in pairs, sessile and pedicelled dissimilar.

Fls. & Frts. : October-January.

Illus. : Deshpande & Hemadri, *op. cit.*; Deshpande & Singh, Grass. Maharashtra 47, t. 6. 1986.

Distrib. : Rare. Ahmednagar; Pune; Satara.

**D. kuntzeana** (Hack.) Jain & Deshpande in Bull. Bot. Surv. India 20: 134. (1978) 1979; Deshpande in Fasc. Fl. India 15: 17. 1984. *Andropogon kuntzeanus* Hack. in DC. Monogr. Phan. 6: 478. 1889; Hook. f. Fl. Brit. India 7: 175. 1896; Cooke, Fl. Pres. Bombay 3: 498. 1958 (Repr. ed.). *Amphilophis kuntzeana* (Hack.) Haines, Bot. Bih. Or. 1031. 1924 [3: 1078. 1961 (Repr. ed.)]; Blatt. & McC. Bombay Grass. 86. 1935. *Bothriochloa kuntzeana* (Hack.) Henr. in Blumea 3: 456. 1940; Bor, Grass. Ind. 108. 1960.

Perennials, c 60 cm high, nodes densely bearded. Leaves 11-18 cm long, linear. Racemes 12-15. Sessile spikelets linear-lanceolate, c 0.4 cm long; pedicelled narrower than sessile ones.

Fls. & Frts. : September-December.

Illus. : Blatt. & McC. *op. cit.* t. 55.

Distrib. : Ahmednagar; Akola; Amaravati; Aurangabad; Chandrapur; Dhule; Kolhapur; Nagpur; Nasik; Pune; Raigad; Thane; Yavatmal.

**D. maccannii** Blatt. in J. Bombay nat. Hist. Soc. 32: 357. 1927; Blatt. & McC. Bombay Grass. 92, t. 60. 1935; Bor, Grass. Ind. 135. 1960; Deshpande in Fasc. Fl. India 15: 19, f. 31-32. 1984.

Herbs; culms tufted, c 45 cm long, densely bearded at nodes. Leaves linear-lanceolate, c 10 cm long, base amplexicaul, hairy with bulbous based hairs. Racemes c 3.5 cm long; lowest 3-4 pairs of spikelets glabrous, upper with a line of ciliate hairs; sessile spikelets c 0.4 cm long; upper glume broadly lanceolate; lower lemma narrowly oblong, obtuse; pedicelled spikelets slightly longer than sessile.

Fls. & Frts. : October-April.

*Illus.* : Blatt. & McC. *op. cit.* ; Deshpande, *op. cit.*

*Distrib.* : Vulnerable, in gravelly soils, in open places on hill tops. Aurangabad; Buldhana; Nagpur; Satara.

**D. odoratum** (D. Lisboa) Jain & Deshpande in Bull. Bot. Surv. India 20: 134. (1978) 1979; Deshpande in Fasc. Fl. India 15: 20. 1984. *Andropogon odoratus* D. Lisboa in J. Bombay nat. Hist. Soc. 4: 123. 1889 *cum* Ic. 6: 68, 203. 1891; Hook. f. Fl. Brit. India 7: 176. 1896; Cooke, Fl. Pres. Bombay 3: 500. 1958 (Repr. ed.). *Amphilophis odorata* (D. Lisboa) A. Camus in Rev. Bot. Appl. 305. 1921; Blatt. & McC. Bombay Grass. 89. 1935. *Bothriochloa odorata* (D. Lisboa) A. Camus in Ann. Soc. Linn. Lyon. 1930 n.s. 76: 164. 1931; Bor, Grass. Ind. 109. 1960. 'Gavatvedi', 'Usdhana'.

Perennials, robust, aromatic; culms 90–120 cm high, erect, nodes bearded. Leaves 30–60 x 0.43–1.0 cm, linear-lanceolate, flat, acuminate, scaberulous on both sides and on margins. Racemes numerous. Sessile spikelets c 0.45 cm long, oblong-lanceolate; callus bearded with silky hairs; pedicelled spikelets equal to sessile.

*Fls. & Frts.* : October–December.

*Illus.* : Blatt. & McC. *op. cit.* t. 56.

*Distrib.* : Kolhapur; Nasik (Blatt. & McC. *op. cit.*); Pune; Raigad; Sangli; Satara; Thane (Cooke, *op. cit.*).

**D. oliganthum** (Hochst. ex Steud.) T. A. Cope in Kew Bull. 35: 703. 1980. *Andropogon oliganthus* Hochst. ex Steud. Syn. Pl. Glum. 1: 368. 1854; Hook. f. Fl. Brit. India 7: 201. 1896. *Heteropogon oliganthus* (Hochst. ex Steud.) Blatt. & McC. in J. Bombay nat. Hist. Soc. 32: 623. 1928 & Bombay Grass. 107. 1935. *Indochloa oligantha* (Hochst. ex Steud.) Bor in Kew Bull. 1954: 79. 1954 & Grass. Ind. 171. 1960.

Herbs, annual, dwarf, tufted. Leaves 5.0–7.5 cm long, flat, sub-ensiform, softly hairy. Spikes shortly exerted from long narrow spathes. Sessile spikelets oblong; pedicelled ovate-oblong, spreading.

*Fls. & Frts.* : October–November.

*Illus.* : Blatt. & McC. Bombay Grass. t. 68. 1935.

*Distrib.* : Ahmednagar; Nasik; Satara; Thane.

**D. panchganiensis** Blatt. & McC. in J. Bombay nat. Hist. Soc. 32: 357. 1927 & Bombay Grass. 90, t. 58. 1935; Bor, Grass. Ind. 135. 1960; Deshpande in Fasc. Fl. India 15: 21, f. 33–34. 1984.

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Herbs, c 30 cm high. Leaves linear, acuminate, 1–5 x 0.3 cm, hairy. Racemes 1.5–2.0 cm long. Sessile spikelets c 0.25 cm long; lower glume oblong, puberulous; lower lemma oblong, ciliolate on margins; upper glume oblong–lanceolate; pedicelled spikelets c 0.3 cm long, lower glume with bulbous based bristles.

Fls. & Frts. : October–November.

Illus. : Blatt. & McC. *op. cit.*; Deshpande, *op. cit.*

Distrib. : Rare. Satara.

**D. parviflorum** (R. Br.) De Wit in Amer. J. Bot. 54: 386. 1967; Deshpande in Fasc. Fl. India 15: 21. 1984. *Holcus parviflorus* R. Br. Prodr. 199. 1810. *Andropogon micranthus* Kunth, Rev. Gram. 1: 165. 1829; Hook. f. Fl. Brit. India 7: 178. 1896. *Capillipedium parviflorum* (R. Br.) Stapf in Prain, Fl. Trop. Afr. 9: 169. 1917; Bor, Grass. Ind. 112. 1960.

Culms 60–90 cm high, erect or ascending, simple or nearly so, terete, nodes bearded. Leaves 15–30 x 0.4–0.6 cm, linear, base rounded, setaceously acuminate, hairy; sheaths tight; ligule short, truncate. Panicles 5–15 cm long, oblong or pyramidal, branches spreading; spikes 0.5–0.7 cm long, pale–yellow, violet or red–brown. Sessile spikelets 0.2–0.3 cm long; pedicelled spikelets male.

Fls. & Frts. : August–January.

Illus. : Deshpande, *op. cit.* 24, f. 38–40.

Distrib. : Pune; Satara; Sindhudurg.

**D. pertusum** (L.) W. D. Clayton in Kew Bull. 32: 4. 1977; Deshpande in Fasc. Fl. India 15: 22. 1984. *Holcus pertusus* L. Mant. 301. 1771. *Andropogon pertusus* (L.) Willd. Sp. Pl. 4: 922. 1806; Hook. f. Fl. Brit. India 7: 173. 1896; Cooke, Fl. Pres. Bombay 3: 497. 1958 (Repr. ed.). *Amphilophis pertusa* (L.) Nash ex Stapf in Agric. News W. Indies 15: 179. 1916; Blatt. & McC. Bombay Grass. 84. 1935. *Bothriochloa pertusa* (L.) A. Camus in Ann. Soc. Linn. Lyon 1930, n. s. 76: 164. 1931; Bor, Grass. Ind. 109. 1960. 'Ghanga', 'Kathora', 'Palva'.

Herbs, perennial, 30–45 cm high, tufted, erect or geniculately ascending, nodes bearded. Leaves up to 30 cm long, narrowly linear, glabrous or pubescent. Racemes 3–15, 2.5–4.5 cm long, silky hairy. Sessile spikelets 0.3–0.4 cm long, oblong–lanceolate; pedicelled spikelets narrower than sessile ones.

Fls. & Frts. : September–October.

*Illus.* : Blatt. & McC. *op. cit.* t. 54; Mahesh. *Illus. Fl. Delhi* f. 267. 1966; Patunkar, *Grass. Marathw.* 43, f. 10. 1980; Matthew, *Illus. Fl. Tamilnadu Carnatic* 2: t. 816. 1982; Ugemuge, *Fl. Nagpur Dt.* t. 178. 1986 (*Bothriochloa pertusa*).

*Distrib.* : Common throughout in open grasslands.

**D. tuberculatum** (Hack.) T. A. Cope in *Kew Bull.* 35: 703. 1980. *Andropogon tuberculatus* Hack. in *DC. Monogr. Phan.* 6: 404. 1889; Hook. f. *Fl. Brit. India* 7: 168. 1896. *Eremopogon tuberculatus* (Hack.) A. Camus in *Ann. Soc. Linn. Lyon*, n. s. 68: 208. 1922; Bor, *Grass. Ind.* 149. 1960; Deshpande & Singh in *J. Bombay nat. Hist. Soc.* 76: 204. (1979) 1980.

Culms 1.2–1.5 m tall, stout, pale-yellow, paniculately branched. Leaves 30–60 x 0.4 cm, rather rigid, setaceously acuminate, base narrowed, scabrid; sheaths smooth; ligule large, membranous, auricled. Spikes 2.5–4.0 cm long; panicle leafy. Sessile spikelets c 0.5 cm long, linear-lanceolate; pedicelled spikelets male.

*Fls. & Frts.* : October.

*Illus.* : Deshpande & Singh, *Grass. Maharashtra* 60, t. 7. 1986 (*Eremopogon tuberculatus*).

*Distrib.* : Rare in open grasslands. Buldhana; Dhule.

**D. woodrowii** (Hook. f.) Jain & Deshpande in *Bull. Bot. Surv. India* 20: 134. (1978) 1979; Deshpande in *Fasc. Fl. India* 15: 25. 1984. *Andropogon woodrowii* Hook. f. *Fl. Brit. India* 7: 173. 1896; Cooke, *Fl. Pres. Bombay* 3: 497. 1958 (Repr. ed.). *Amphilophis woodrowii* (Hook. f.) A. Camus in *Rev. Bot. Appl.* 305. 1921; Blatt. & McC. *Bombay Grass.* 84. 1935. *Bothriochloa woodrowii* (Hook. f.) A. Camus in *Ann. Soc. Linn. Lyon*, 1930, n. s. 76: 165. 1931; Bor, *Grass. Ind.* 110. 1960.

Tufted grasses, with woody rootstock, c 1.5 m tall. Leaves 30–60 x 0.3–0.4 cm, rigid, scaberulous on both surfaces and margins; sheaths loose, keeled; ligule membranous, truncate, ciliate. Racemes 3–5, pale, 1.2–2.5 cm long. Sessile spikelets c 0.4 cm long, oblong-lanceolate; pedicelled spikelets rather narrower than sessile.

*Fls. & Frts.* : December–January.

*Distrib.* : Vulnerable, in the plains in low rainfall area. Pune.

*Notes* : It is endemic to Maharashtra

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| 1. Hairs present on spikelets and always verrucose   | ... | <i>D. longiflora</i>  |
| 1. Hairs on spikelets, if any, never verrucose :   |     |                       |
| 2. Hairs on spikelets clavate :  |     |                       |
| 3. Tips of pedicels somewhat thickened, without a rim of hairs   | ... | <i>D. abludens</i>    |
| 3. Tips of pedicels cupuliform with hairs on rim and below :   |     |                       |
| 4. Upper glume short or up to two-thirds of length of spikelet only, or nearly absent; erect annuals; spikelets 0.125 cm long                          | ... | <i>D. stricta</i>     |
| 4. Upper glume well developed, at least two-thirds the length of spikelet; spikelets 0.225 cm long   | ... | <i>D. ternata</i>     |
| 2. Hairs on spikelets, if any, without a globular thickening, not clavate :  |     |                       |
| 5. Upper glume a nerved or nerveless triangular scale  | ... | <i>D. setigera</i>    |
| 5. Upper glume well-developed, mostly one-half to three quarters, at least one-third, the length of spikelet :   |     |                       |
| 6. Spikelets of each pair heteromorphous, sessile spikelet nearly glabrous in front; the pedicelled coated with long hairs often spreading at maturity | ... | <i>D. bicornis</i>    |
| 6. Spikelets of each pair not heteromorphous, both spikelets of each pair with the same type of indumentum :   |     |                       |
| 7. Nerves of lower lemma with minute triangular spines on upper part of nerves   | ... | <i>D. sanguinalis</i> |
| 7. Nerves of lower lemma smooth, without minute triangular spines on nerves  | ... | <i>D. ciliaris</i>    |

*Digitaria abludens* (R. & S.) Veldk. in Blumea 21: 53. 1973. *Panicum abludens* R. & S. Syst. Veg. 2: 457. 1817. *Paspalum pedicellare* Trin. ex Hook. f. Fl. Brit. India 7: 19. 1896. *Digitaria pedicellaria* (Trin. ex Hook. f.) Prain, Beng. Pl. 1181. 1903 [ 2: 890. 1963 (Repr. ed.) ]; Cooke, Fl. Pres. Bombay 3: 458. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 126. 1935. *D. granularis* (Trin. ex. Spr.) Henr. Monogr. Gen. *Digitaria* 302. 1950; Bor, Grass. Ind. 301. 1960.

Herbs, annual c 30 cm high, tufted; culms erect or geniculately ascending, not rooting at nodes. Leaves 6–15 x 0.2–0.3 cm, linear-lanceolate, finely acuminate. Racemes 3–10, alternate, 5.0–6.5 cm long. Spikelets c 0.1 cm long, elliptic, oblong-elliptic or oblong-obovate. Grains ellipsoid, apiculate.

*Fls. & Frts.* : August–October.

*Illus.* : Blatt. & McC. *op. cit.* t. 80.

*Distrib.* : Common in all districts.

**D. bicornis** (Lam.) R. & S. ex Loud. Hort. Brit. 24: n. 1578. 1830; Bor, Grass. Ind. 299. 1960; Veldk. in Blumea 21: 30. 1973. *Paspalum bicornis* Lam. Illustr. 1: 176. 1791.

Herbs, annuals, erect or decumbent–ascending. Leaves lanceolate, base contracted, scabrid. Racemes 2–6, subdigitate, 8–10 cm long, pedicels scabrid. Spikelets c 0.35 cm long, elliptic–lanceolate; upper glume 5-nerved; lower lemma prominently nerved.

*Fls. & Frts.* : August–December.

*Illus.* : Matthew, *Illus. Fl. Tamilnadu Carnatic* 2: tt. 846 & 847. 1982; & Further *Illus. Fl. Tamilnadu Carnatic* 4: tt. 746 & 747. 1988.

*Distrib.* : Ahmednagar; Akola; Amaravati; Aurangabad; Beed; Bombay; Buldhana; Chandrapur; Dhule; Kolhapur; Osmanabad; Parbhani; Raigad; Ratnagiri; Thane.

*Notes* : Pradhan gives a note on two interesting forms of this species in *J. Econ. Tax. Bot.* 6: 347–349. 1985.

**D. ciliaris** (Retz.) Koel. Descr. Gram. 27. 1802; Veldk. in Blumea 21: 32. 1973. *Panicum ciliare* Retz. Obs. Bot. 4: 16. 1786. *Digitaria biformis* Willd. Enum. Pl. Hort. Berol. 92. 1809; Bor, Grass. Ind. 299. 1960. *Paspalum sanguinale* Lam. var. *ciliare* (Retz.) Hook. f. Fl. Brit. India 7: 15. 1896. *P. sanguinale* var. *rottleri* Hook. f. *op. cit.* 16. 889. 1963 (Repr. ed.) ; Cooke, Fl. Pres. Bombay 3: 457. 1958 (Repr. ed.). *Digitaria sanguinalis* Scop. var. *ciliaris* Prain, Beng. Pl. 1181. 1903 [2: 440. 1919; Blatt. & McC. Bombay Grass. 125. 1935. *D. adscendens* (H.B. & K.) Henr. in Blumea 1: 92. 1934; Bor, *op. cit.* 289. *D. adscendens* ssp. *chrysoblephara* (Fig. & de Not.) Henr. in Monogr. Gen. *Digitaria* 998. 1950; Bor, *op. cit.* 299. *D. adscendens* var. *criniformis* Henr. *op. cit.* 999 (based on *D. fimbriata* Link); Bor, *op. cit.*

Herbs, annual, tufted, up to 90 cm high, branches ascending; culms branched, rooting at base. Sheaths with spreading hairs. Leaves 4.2–18.0 x 0.3–0.8 cm, linear or linear–lanceolate, glabrous or sparsely hairy. Racemes 2–6, 8–17 cm long. Spikelets c 0.3 cm long, narrowly elliptic. Grains ellipsoid.

*Fls. & Frts.* : August–February.

*Illus.* : Bor, *op. cit.* (D. adscendens); Tamilnadu Carnatic

*Distrib.* : Co

**D. longiflo**  
Bombay 3: 458.  
1935; Bor, Grass  
*Paspalum longi*  
(Kunth) Henr. M

Herbs, an  
caespitose, ext  
Leaves 2.5–12.0  
erect or spreadi

*Fls. & Frt*

*Illus.* : B  
Tamilnadu Ca

*Distrib.*  
Nanded; Nasi  
Sindhudurg.

**D. sang**  
Ind. 304. 196  
Almeida, Fl.  
57. 1753. Pa  
Brit. India  
frumentace  
sanguinalis

Annua  
lower lemm

*Fls. &*

*Distrib*  
Almeida, c

**D. s**  
Ind. 305.  
Fl. Pak. 1  
Brit. Indi  
*cit. Digit*  
Herb. n

*Illus.* : Bor, *op. cit.* 490, f. 54; Mahesh. *Illus. Fl. Delhi* f. 259. 1966 (*D. adscendens*); Veldk. *op. cit.* 36, t. 5A; Matthew Further *Illus. Fl. Tamilnadu Carnatic* 4: tt. 748 & 749. 1988.

*Distrib.* : Common throughout in bushes and hedges.

**D. longiflora** (Retz.) Pers. Syn. Pl. 1: 85. 1805; Cooke, *Fl. Pres. Bombay* 3: 458. 1958 (Repr. ed.); Blatt. & McC. *Bombay Grass*. 127. 1935; Bor, *Grass. Ind.* 302. 1960; Veldk. in *Blumea* 21: 66. 1973. *Paspalum longiflora* Retz. Obs. Bot. 4: 15. 1786. *Digitaria preslii* (Kunth) Henr. Monogr. Gen. *Digitaria* 589. 1950; Bor, *op. cit.* 304.

Herbs, annual or perennial; culms 10–50 cm tall, tufted, caespitose, extensively branched, slender. Sheaths smooth or hairy. Leaves 2.5–12.0 x 0.25–0.8 cm, ovate-lanceolate or linear. Racemes 2–6, erect or spreading. Spikelets narrowly ovoid-ellipsoid, pubescent.

*Fls. & Frts.* : August–December.

*Illus.* : Blatt. & McC. *op. cit.* t. 81; Matthew, Further *Illus. Fl. Tamilnadu Carnatic* 4: tt. 750 & 751. 1988.

*Distrib.* : Bombay; Buldhana; Chandrapur; Jalgaon; Kolhapur; Nanded; Nasik (Blatt. & McC. *op. cit.*); Pune; Raigad; Ratnagiri; Satara; Sindhudurg.

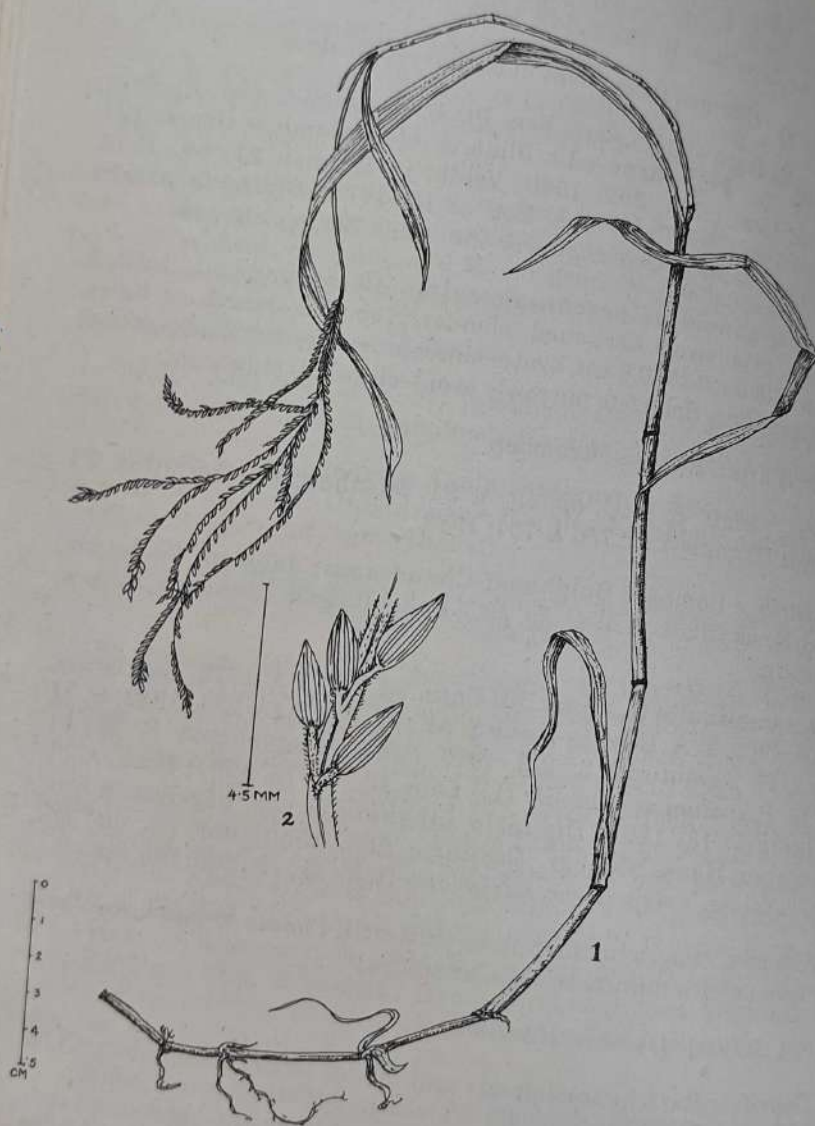
**D. sanguinalis** (L.) Scop. *Fl. Carn. ed.* 2. 1: 52. 1772; Bor, *Grass. Ind.* 304. 1960; T. A. Cope in Nasir & Ali, *Fl. Pak.* 143: 231. 1982; S. M. Almeida, *Fl. Savantwadi* 2: 123. 1990. *Panicum sanguinale* L. Sp. Pl. 57. 1753. *Paspalum sanguinale* (L.) Lam. Ill. 1: 176. 1791; Hook. f. *Fl. Brit. India* 7: 13. 1896. *Digitaria sanguinalis* ssp. *aegyptiaca* var. *frumentacea* Henr. Monogr. *Digitaria* 985. 1950; Bor, *op. cit.* *D. sanguinalis* ssp. *vulgaris* var. *rottleriana* Henr. *op. cit.* 986; Bor, *op. cit.*

Annuals. Leaves broad. Spikes clustered. Florets in pairs, awnless; lower lemma with minute triangular spines.

*Fls. & Frts.* : October–November.

*Distrib.* : Rare in wastelands and in rice fields. Sindhudurg (S.M. Almeida, *op. cit.*).

**D. setigera** Roth ex R. & S. Syst. Veg. 2: 474. 1817; Bor, *Grass. Ind.* 305. 1960; Veldk. in *Blumea* 23: 37. 1973; T. A. Cope in Nasir & Ali, *Fl. Pak.* 143: 226. 1982. *Paspalum sanguinale* var. *extensum* Hook. f. *Fl. Brit. India* 7: 15. 1896. *P. sanguinale* var. *pruriens* (Trin.) Hook. f. *op. cit.* *Digitaria microbachne* (J. S. ex C. B. Presl) Henr. in Meded. Rijks Herb. no. 16: 13. 1930; Bor, *op. cit.* 302. *D. microbachne* var.



*Digitaria setigera* Roth ex R. & S.  
1. Herbs 2. Spikelet

*calliblepharata*  
*setigera* var. *calli*

Annuals, c  
Racemes 6-12, 6  
0.25-0.29 cm long  
margins; upper  
nerve of lower  
white.

Fls & Frts

Illus.: M  
& 754. 1988.

Distrib.:

*D. strict*  
305. 1960; T.  
*royleanum* N  
*royleana* (Ne  
(Repr. ed.)); C  
McC. Bomba  
Monogr. Ge  
*glabrescens* L

Herbs,  
scattered ha  
spike-like  
oblong, ellip

Fls. &

Illus.  
f. 42. 1980.

Distr  
lands.

*D. te*  
Fl. Pres. I  
124. 1935  
*Cynodon*  
*ternatum*

Her  
cm, line  
long, in p

*calliblepharata* Henr. Monogr. Gen. *Digitaria* 452, f. 945. 1950. *D. setigera* var. *calliblepharata* (Henr.) Veldk. op. cit. 40.

Annuals, c 100 cm high, erect or suberect, rooting at lower nodes. Racemes 6–12, 6–12 cm long on a short main rhachis. Spikelets in pairs, 0.25–0.29 cm long, the lower one subsessile with a few soft hairs along margins; upper one with pedicel and soft hairs, in between 2nd and 3rd nerve of lower lemma. Grains c 0.2 cm long, oblong-ellipsoid, snow white.

*Fls & Frts.* : September–October.

*Illus.* : Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: tt. 753 & 754. 1988.

*Distrib.* : Akola; Bombay; Dhule; Pune; Thane.

*D. stricta* Roth ex R. & S. Syst. Veg. 2: 474. 1817; Bor, Grass. Ind. 305. 1960; T. A. Cope in Nasir & Ali, Fl. Pak. 143: 222. 1982. *Paspalum royleanum* Nees ex Hook. f. Fl. Brit. India 7: 18. 1896. *Digitaria royleana* (Nees ex Hook. f.) Prain, Beng. Pl. 1182. 1903 [2: 890. 1963 (Repr. ed.)]; Cooke, Fl. Pres. Bombay 3: 459. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 127. 1935. *D. stricta* var. *denudata* (Link) Henr. Monogr. Gen. *Digitaria* 175. 1950; Bor, op. cit. 306. *D. stricta* var. *glabrescens* Bor in Webbia 11: 336. 1955 & Grass. Ind. 305. 1960.

Herbs, annual, tufted c 15 cm high. Sheaths glabrous or with few scattered hairs. Leaves 4.5–12.0 x 0.1–0.2 cm, linear. Inflorescence of spike-like racemes; racemes 3–4 cm long. Spikelets c 0.1 cm long, oblong, ellipsoid or narrowly obovoid. Grains ellipsoid, apiculate.

*Fls. & Frts.* : August–February.

*Illus.* : Blatt. & McC. op. cit. t. 82; Patunkar, Grass. Marathw. 143, f. 42. 1980.

*Distrib.* : Common throughout in cultivated fields and on wet lands.

*D. ternata* (A. Rich.) Stapf ex Dyer, Fl. Cap. 7: 376. 1898; Cooke, Fl. Pres. Bombay 3: 457. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 124. 1935; Bor, Grass. Ind. 306. 1960; Veldk. in Blumea 23: 59. 1973. *Cynodon ternatus* A. Rich. Tent. Fl. Abyss. 2: 405. 1851. *Paspalum ternatum* Hook. f. Fl. Brit. India 7: 17. 1896.

Herbs, annual, erect, tufted, c 25 cm high. Leaves 3.0–7.5 x 0.3–0.5 cm, linear-lanceolate. Racemes 2–10, 6–9 cm long. Spikelets c 0.2 cm long, in pairs, upper long-pedicelled. Grains as long as spikelets.

*Fls. & Frts.* : September–December.

*Illus.* : Blatt. & McC. *op. cit.* t. 77; Matthew Further *Illus. Fl.* Tamilnadu Carnatic 4: tt. 755 & 756. 1988.

*Distrib.* : Akola; Amaravati; Aurangabad; Kolhapur; Nagpur; Nasik; Osmanabad; Parbhani; Pune; Raigad; Sangli; Satara; Sholapur; Thane; Wardha; Yavatmal.

### CULTIVATED SPECIES :

*D. pentzii* Stent in Bothalia 3: 147. 1930; Bor. Grass. Ind. 304. 1960; S. M. Almeida, *Fl. Savantwadi* 2: 123. 1990.

Stoloniferous annuals; culms thickened at base, covered with densely silky villous cataphylls. Leaves linear. Inflorescences of terminal digitate racemose spikes. Lower glumes well developed, upper glumes shorter than length of spikelet.

*Fls. & Frts.* : August–January.

*Distrib.* : Introduced, may occur also as a weed. Kolhapur (Salunkhe, 1995); Sindhudurg (S.M. Almeida, *op. cit.*).

### DIMERIA R. Br.

- |   |     |                       |
|---|-----|-----------------------|
| 1. Spikelets 0.8–1.2 cm long  | ... | <i>D. blatteri</i>    |
| 1. Spikelets less than 0.7 cm long :  |     |                       |
| 2. Racemes solitary   | ... | <i>D. santapau</i>    |
| 2. Racemes many (2–10) :  |     |                       |
| 3. Each rhachis circinatately involute forming a hoop   | ... | <i>D. woodrowii</i>   |
| 3. Each rhachis straight or flexuous :  |     |                       |
| 4. Perennials   | ... | <i>D. gracilis</i>    |
| 4. Annuals :  |     |                       |
| 5. Rhachis filiform or trigonous :  |     |                       |
| 6. Spikelets 0.3–0.35 cm long, parallel to rhachis; pedicels less than 0.05 cm long; callus not longer than 0.025 cm; glumes not winged               | ... | <i>D. hohenackeri</i> |
| 6. Spikelets 0.4–0.7 cm long, spreading; pedicels up to 0.2 cm long; callus not less than 0.05 cm long; upper glume with a rounded corky wing on back | ... | <i>D. stapfiana</i>   |
| 5. Rhachis flattened :  |     |                       |
| 7. Upper glume not winged   | ... | <i>D. ornithopoda</i> |

7. Upper glume with  
8. Upper glume  
8. Upper glume

*Dimeria* R. Br.  
140. 1960.

Annuals,  
Leaves 3–5 x 0.5  
sides, bulbous-  
4–6 cm long. S  
0.7–1.2 cm long  
long hairs at t  
oblong, hairy &

*Fls. & Frts.*

*Illus.* : B

*Distrib.*  
Pune; Ratnag

*Note* : I  
Maharashtra

*D. con*  
Fl. Brit. Ind  
Moorthy in

Annua  
slender asc  
Leaves 1.25  
on their m  
long. Spike  
Grains c 0.5

*Fls. &*

*Illus.*

*Distrib.*

*D. d*  
140, f. 3(3)

Tuft  
mm long;  
awn 7–9

7. Upper glume winged all along or at least at tip :
8. Upper glume winged all along
8. Upper glume winged just below tip only

... *D. connivens*

... *D. deccanensis*

**Dimeria blatteri** Bor in Kew Bull. 1949: 70. 1949 & Grass. Ind. 140. 1960.

Annuals, 35-90 cm tall; culms slender, tufted, nodes bearded. Leaves 3-5 x 0.15-0.25 cm, linear or linear-lanceolate, hairy on both sides, bulbous-based along margins, apex finely acute. Racemes 2-4, 4-6 cm long. Spikelets pedicelled, laterally compressed, excluding awn, 0.7-1.2 cm long; lower glume elliptic-oblong, hairy all along keel, with long hairs at tip, margins hyaline; upper glume 0.6-0.9 cm long, linear-oblong, hairy along keel.

*Fls. & Frts.* : October-November.

*Illus.* : Bor, *op. cit.* 143, f. 4 (18).

*Distrib.* : Rare in open situations along higher slopes of the ghats. Pune; Ratnagiri; Sindhudurg.

*Note* : Endemic to Western Ghats of the above three districts of Maharashtra State.

**D. connivens** Hack. in DC. Monogr. Phan. 6: 689. 1889; Hook. f. Fl. Brit. India 7: 104. 1896; Bor, Grass. Ind. 140. 1960; Malhotra & Moorthy in J. Bombay nat. Hist. Soc. 70: 600. 1974.

Annuals, tufted, with leaves chiefly near the base of the very slender ascending culms, 10-25 cm high; nodes minutely bearded. Leaves 1.25-7.5 x 0.38 cm, linear with long tubercle-based hairs chiefly on their margins, apex acuminate. Spikes erect, parallel, 2.5-3.7 cm long. Spikelets 0.35-0.38 cm long, excluding the 0.75 cm long awn. Grains c 0.25 cm long, linear, slightly curved.

*Fls. & Frts.* : October-November.

*Illus.* : Bor, *op. cit.* 143, f. 4(16).

*Distrib.* : Rare on moist, gritty soil. Chandrapur.

**D. deccanensis** Bor in Kew Bull. 1952: 564. 1953 & Grass. Ind. 140, f. 3(3). 1960.

Tufted herbs; culms 4-18 cm tall. Racemes 2. Spikelets 1.8-4.0 mm long; upper glume corky on the back, with a small wing near apex; awn 7-9 mm long.

*Fls. & Frts.* : October.

*Illus.* : Bor, *op. cit.*

*Distrib.* : Common along coasts. Ratnagiri (S.M. Almeida, 1983-86).

**D. gracilis** Nees ex Steud. Syn. Pl. Glum. 1: 413. 1855; Hook. f. Fl. Brit. India 7: 105. 1896; Cooke, Fl. Pres. Bombay 3: 463. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 9. 1935; Bor, Grass. Ind. 140. 1960.

Perennials, 20-100 cm tall; culms tufted, nodes bearded. Leaves 6-12 x 0.2-0.5 cm, linear-lanceolate, glabrous or hairy on both sides, especially on nerves, margins bulbous-based hairy. Racemes 2-many, 4-10 cm long, rhachis filiform. Spikelets 0.4-0.5 cm long, pedicelled, laterally compressed; lower glume linear-oblong, appressed, or silky hairy, with few long hairs at tip, keeled; upper glume narrowly linear-oblong, 0.3-0.4 cm long, appressed or silky hairy, with a few long hairs at tip, keeled.

*Fls. & Frts.* : September-December.

*Illus.* : Bor, *op. cit.* 141, f. 3(4).

*Distrib.* : Pune; Raigad (Blatt. & McC. *op. cit.*); Ratnagiri; Sindhudurg.

**D. hohenackeri** Hochst. ex Miq. in Verh. Konink. Nederl. Inst. 3, 4: 35. 1851; Hook. f. Fl. Brit. India 7: 103. 1896; Bor, Grass. Ind. 142. 1960.

Annuals, 10-50 cm tall, tufted; culms slender, nodes hairy. Leaves 2-6 x 0.1-0.3 cm, linear to linear-lanceolate, sparsely hairy or mostly glabrous, margins bulbous-based hairy. Racemes 2-6, 4-8 cm long. Spikelets 0.3-0.4 cm long, laterally compressed, shortly pedicelled; lower glume narrowly linear-oblong, hairy, not or slightly keeled, long hairy in upper half, upper glume equal or slightly shorter than lower ones, hairy, rounded on back.

*Fls. & Frts.* : October-February.

*Illus.* : Bor, *op. cit.* 143, f. 4 (23); Kulkarni, Fl. Sindhudurg 521, figs. 1-8. 1987.

*Distrib.* : Kolhapur; Ratnagiri; Sindhudurg; Thane.

**D. ornithopoda** Trin. Fund. Agrost. 167, t. 14. 1820; Hook. f. Fl. Brit. India 7: 104. 1896; Cooke, Fl. Pres. Bombay 3: 462. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 8. 1935; Bor, Grass. Ind. 142. 1960.

1. Spikelets 0.15-0.2
1. Spikelets 0.25-0.3

var. *ornithopoda*

Annuals, 1-2 m tall  
2-5 x 0.15-0.2 cm  
Racemes 2-3, 2-4 cm long  
linear, hairy, with a few long hairs at tip, slightly longer than broad

*Fls. & Frts.*

*Illus.* : Blatt. & McC.

*Illus.* Fl. Tamil Nadu

*Distrib.*

Ratnagiri; Sindhudurg

var. *megala*

144. 1960; Bor, Grass. Ind. 142. 1960; S.M. Almeida

Annuals

cm long.

*Fls. & Frts.*

*Distrib.*

Ratnagiri; Sindhudurg; *op. cit.*

**D. sandwicensis**

Annuals

0.1-0.15 cm long, densely hairy, tip pointed, long or more than broad

*Fls. & Frts.*

*Illus.*

*Distrib.*

**D. sandwicensis**

14 e: 109. 1960; Hook. Ic. Fl. Pres.

1. Spikelets 0.15–0.25 cm long; anthers 0.05 cm long  
 1. Spikelets 0.25–0.3 cm long; anthers 0.15 cm long

... var. *ornithopoda*  
 ... var. *megalantha*

var. *ornithopoda*. 'Khap-kurdi'.

Annuals, 15–25 cm tall; culms slender, tufted, nodes hairy. Leaves 2–5 x 0.15–0.2 cm, linear to linear-lanceolate, hairy on both sides. Racemes 2–3, 2–4 cm long. Spikelets 0.18–0.2 cm long; lower glume linear, hairy, with a few long hairs at tip, upper glume linear, equal to or slightly longer than lower one, hairy, keeled, narrow.

Fls. & Frts. : October–December.

Illus. : Blatt. & McC. *op. cit.* t. 4; Bor *op. cit.* 141, f. 3(8); Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 848. 1982.

Distrib. : Ahmednagar; Bombay; Kolhapur; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

var. *megalantha* Bor in Kew Bull. 1952: 576. 1952 & Grass. Ind. 144. 1960; Bole & Almeida in J. Bombay nat. Hist. Soc. 84: 381. 1987; S.M. Almeida, Fl. Savantwadi 2: 125. 1990.

Annuals. Leaves linear. Spikelets 0.25–0.3 cm long; anthers c 0.15 cm long.

Fls. & Frts. : October–November.

Distrib. : Rare in drying rice fields and in partially wet ground. Ratnagiri; Satara (Bole & Almeida, *op. cit.*); Sindhudurg (S.M. Almeida, *op. cit.*).

**D. santapau** Almeida in J. Bombay nat. Hist. Soc. 66: 510. 1970.

Annuals, 15–20 cm tall; culms tufted, nodes hairy. Leaves 3–6 x 0.1–0.15 cm, linear, glabrous. Racemes 3–5 cm long. Spikelets 0.5–0.6 cm long, dark-brown; lower glume linear, rounded on back and rough, tip pointed with a few long hairs, rest glabrous; upper glume 0.4 cm long or more, rounded on back and rough, tip pointed.

Fls. & Frts. : September–October.

Illus. : Almeida, *op. cit.* 511.

Distrib. : Rare along coasts. Ratnagiri; Sindhudurg.

**D. stapfiana** C. E. Hubb. ex Pilger in Engl. & Prantl. Pflanzenf. 14 e: 109. 1940; Bor, Grass. Ind. 144. 1960. *Woodrowia diandra* Stapf in Hook. Ic. Pl. t. 2447. 1896; Hook. f. Fl. Brit. India 7: 241. 1896; Cooke, Fl. Pres. Bombay 3: 533. 1958 (Repr. ed.). *Dimeria diandra* Stapf ex

Bhide in J. Proc. Asiat. Soc. Bengal (N. S.) 7: 516. 1911 non Griff. 1851.  
Blatt. & McC. Bombay Grass. 9. 1935. 'Kotir'.

Annuals, tufted, 25–50 cm tall; culms slender, nodes bearded.  
Leaves 4–10 x 0.2–0.25 cm, linear, hairy on both sides, margins  
bulbous-based hairy. Racemes 2–4, 4–6 cm long. Spikelets 0.5–0.8 cm  
long, laterally compressed, pedicellate; lower glume linear-oblong,  
0.6–0.8 cm long, margins ciliate, rounded on back, with a few long hairs  
at tip, narrow, linear; upper glume 0.5–0.6 cm long, with ciliate keel,  
hairy, shorter than lower one.

Fls. & Frts. : September–February.

Illus. : Bor, *op. cit.* 143, f. 4(13).

Distrib. : Ahmednagar (Blatt. & McC. *op. cit.*); Bombay;  
Chandrapur; Pune; Raigad; Ratnagiri; Sindhudurg; Thane.

**D. woodrowii** Stapf in Hook. Ic. Pl. t. 2312. 1894; Hook. f. Fl.  
Brit. India 7: 104. 1896; Cooke, Fl. Pres. Bombay 3: 462. 1958 (Repr.  
ed.); Blatt. & McC. Bombay Grass. 8. 1935; Bor, Grass. Ind. 144. 1960.

Annuals, 8–12 cm tall; culms slender, tufted, nodes hairy. Leaves  
3–6 x 0.1–0.15 cm, linear, glabrous, margins bulbous-based hairy.  
Racemes 2, 2.0–2.5 cm long. Spikelets 0.3–0.4 cm long, distant,  
pedicellate, laterally compressed, imperfectly awned; lower glume  
linear, glabrous or sparsely hairy, upper glume narrow and equal or  
slightly shorter than lower one, deciduous hairy, glabrous at length.

Fls. & Frts. : September–February.

Illus. : Blatt. & McC. *op. cit.* t. 5; Bor, *op. cit.* 143, f. 4(22);  
Kulkarni, Fl. Sindhudurg 524, figs. 1–8. 1987.

Distrib. : Rare in open rocky plains along coastal hilly areas.  
Ratnagiri; Sindhudurg.

Notes. : Endemic to Maharashtra, Goa and Karnataka.

#### DINEBRA Jacq.

**Dinebra retroflexa** (Vahl) Panz. in Denkschr. Acad. Wiss.  
Munchen 270, t. 12. 1814; Blatt. & McC. Bombay Grass. 264. 1935; Bor,  
Grass. Ind. 491. 1960. *Cynosurus retroflexus* Vahl, Symb. Bot. 2: 20.  
1791. *Dinebra arabica* Jacq. Fragm. Bot. 77, t. 121, f. 1. 1809; Hook. f.  
Fl. Brit. India 7: 297. 1896; Cooke, Fl. Pres. Bombay 3: 562. 1958 (Repr.  
ed.). 'Lonigawat'.

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Herbs, tufted, branched, up to 60 cm high; culms erect or geniculate ascending. Leaves 7.5–15.0 x 0.3–0.5 cm, linear, finely acuminate. Inflorescence pyramidal, spicate, 14–18 cm long; racemes stiff, oblong. Spikelets c 0.4 cm long.

*Fls. & Frts.* : September–February.

*Illus.* : Blatt. & McC. *op. cit.* t. 177; Patunkar, Grass. Marathw. 236, f. 73. 1980; Matthew, *Illus. Fl. Tamilnadu Carnatic* 2: tt. 849 & 850. 1982.

*Distrib.* : Common throughout as a weed in cultivated fields.

DIPLACHNE P. Beauv.

**Diplachne fusca** (L.) P. Beauv. ex R. & S. Syst. Veg. 2: 615. 1817; Hook. f. Fl. Brit. India 7:329. 1896; Cooke, Fl. Pres. Bombay 3: 552. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 246, t. 163. 1935; Bor, Grass. Ind. 492. 1960; T. A. Cope in Nasir & Ali, Fl. Pak. 143: 72. 1982. *Festuca fusca* L. Syst. Veg. ed. 10. 2: 876. 1759.

Herbs; culms tufted, ascending, c 1 m high. Leaves convolute, 5–10 cm long. Panicles 10–17 cm long. Spikelets linear-oblong, 8-flowered; lower glume oblong-lanceolate, c 0.3 cm long, 1-nerved; lemmas elliptic-oblong, c 0.4 cm long, 3-lobed, 1-nerved, margins ciliate.

*Fls. & Frts.* : September–October.

*Illus.* : Blatt. & McC. *op. cit.*; Matthew, *Illus. Fl. Tamilnadu Carnatic* 2: tt. 851 & 852. 1982.

*Distrib.* : Bombay (Cooke, *op. cit.*); Raigad (Blatt. & McC. *op. cit.*); Satara; Thane.

ECHINOCHLOA P. Beauv.

- |  |     |                       |
|--|-----|-----------------------|
| 1. Ligule a fringe of stiff hairs, at least in lower leaves  | ... | <i>E. stagnina</i>    |
| 1. Ligule entirely absent :  |     |                       |
| 2. Spikelets 0.3–0.4 cm long, densely crowded, unawned; grains not deciduous                           | ... | <i>E. frumentacea</i> |
| 2. Spikelets up to 0.5 cm long (if densely crowded, 0.3–0.35 cm long and awned); grains deciduous :    |     |                       |
| 3. Lower lemma and upper glume equally acute or cuspidate, not awned                                   | ... | <i>E. colona</i>      |
| 3. Lower lemma and upper glume acuminate, cuspidate, the former often produced into a considerable awn | ... | <i>E. crusgalli</i>   |

**Echinochloa colona** (L.) Link, Hort. Berol. 2: 209. 1833; Blatt. & McC. Bombay Grass. 148. 1935; Bor, Grass. Ind. 308. 1960. *Panicum colonum* L. Syst. Nat. ed. 10. 2: 870. 1759; Hook. f. Fl. Brit. India 7: 32. 1896; Cooke, Fl. Pres. Bombay 3: 447. 1958 (Repr. ed.). 'Barad', 'Bovur', 'Harund', 'Ranborat', 'Rovar', 'Sama', 'Savank'.

Herbs, annual, decumbent-ascending; culms 40-90 cm long, rooting at base. Leaves 3-30 x 0.4-2.0 cm, linear-lanceolate, scabrid, apex acute to acuminate. Racemes spiciform, distant, 5-10, 1.5-2.0 cm long. Spikelets c 0.3 cm long, ovoid; lower glume 1/2 as long as lower lemma, broadly ovate; upper glume cuspidate, hairy; lower lemma ovate, hairy; upper lemma polished.

Fls. & Frts. : July-February.

Illus. : Blatt. & McC. op. cit. t. 94; Tad. & Venkatanarayana, Handb. S. Indian Weeds 432, f. 172. 1955 (Rev. ed.); Bor, op. cit. 309, f. 34; Ramam. in Sald. & Nicols. Fl. Hassan Dt. 702, f. 111 H. 1976; Patunkar, Grass. Marathw. 146, f. 43. 1980.

Distrib. : Common throughout as a weed in harvested rice fields and water logged areas.

**E. crusgalli** (L.) P. Beauv. Ess. Agrost. 53, 761. 1812; Blatt. & McC. Bombay Grass. 150. 1935; Bor, Grass. Ind. 310. 1960; T. A. Cope in Nasir & Ali, Fl. Pak. 143: 193. 1982. *Panicum crusgalli* L. Sp. Pl. 56. 1753; Hook. f. Fl. Brit. India 7: 30. 1896. *Echinochloa crusgalli* var. *submutica* Neill. Fl. Nied. Ost. 31. 1859; Bor, op. cit. *E. crusgalli* var. *brevisetata* (Doell.) Neitr, op. cit.; Bor, op. cit. 'Bover', 'Pacad'.

Herbs, annual; culms erect, smooth, 20-60 cm tall. Leaves 4-25 x 0.5-1.5 cm, linear-lanceolate. Inflorescence a terminal panicle, 8-15 cm long, rhachis triquetrous, scabrid, bristly. Spikelets 0.35-0.4 cm long, elliptic-ovate; lower glume cuspidate, upper glume broadly ovate-oblong; lemma c 0.3 cm long. Grains 0.2-0.25 cm long, broadly ellipsoid.

Fls. & Frts. : August-November.

Illus. : Blatt. & McC. op. cit. t. 95; T. A. Cope in Nasir & Ali, Fl. Pak. 143: 194, f. 22. 1982.

Distrib. : Aurangabad; Bombay; Chandrapur; Dhule; Kolhapur; Osmanabad; Parbhani; Pune (Blatt. & McC. op. cit.); Ratnagiri; Satara; Sindhudurg.

Note : Cooke (3: 447) did not believe that the true *Panicum crusgalli* of Linnaeus occurred anywhere in the Bombay Presidency. He felt *E. stagnina* P. Beauv. was mistaken for it. However, Blatter &

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McCann (1928) reported it from Gujarat, Maharashtra, S. M. Country and N. Kanara.

**E. frumentacea** Link, Hort. Berol. 1: 204. 1827; Bor, Grass. Ind. 311. 1960. *Panicum crusgalli* var. *frumentaceum* Hook. f. Fl. Brit. India 7: 31. 1896. *P. stagninum* var. *frumentacea* Trim. Cat. Ceyl. Pl. 104. 1885; Cooke, Fl. Pres. Bombay 3: 447. 1958 (Repr. ed.). *Echinochloa colona* var. *frumentacea* (Link) Ridl. Fl. Mal. Penin. 5: 223. 1925; Blatt. & McC. Bombay Grass. 149. 1935. 'Barti', 'Sawan', 'Shamule'.

Herbs, tall, robust; culms 40–90 cm long. Leaves 12–18 x 0.5–1.2 cm, linear-lanceolate. Spikes 1.5–2.5 cm long, thickened, often incurved, sometimes branched and corymbosely paniced. Spikelets 0.3–0.4 cm long, ovoid.

Fls. & Frts. : August–February.

Illus. : Mathew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 764. 1988.

Distrib. : Ahmednagar; Akola; Amaravati; Chandrapur; Dhule; Jalgaon; Nagpur; Nasik; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane. Cultivated on a small scale in Marathawada (Patunkar, 1980).

**E. stagnina** (Retz.) P. Beauv. Ess. Agrost. 53, 161, 171. 1812; Blatt. & McC. Bombay Grass. 151. 1935; Bor, Grass. Ind. 311. 1960. *Panicum stagninum* Retz. Obs. Bot. 5: 17. 1789; Cooke, Fl. Pres. Bombay 3: 446. 1958 (Repr. ed.). *P. crusgalli sensu* Hook. f. Fl. Brit. India 7: 30. 1896 p.p. non L. 1753. 'Banti'.

Herbs, annual or perennial; culms 20–50 cm tall, rooting at nodes; rhizomes creeping. Leaves 10–25 x 0.5–0.8 cm, linear, tapering to a fine point. Inflorescence of branched panicles, 10–20 cm long. Spikelets 0.4–0.5 cm long, ovoid-lanceolate, pale green or purple.

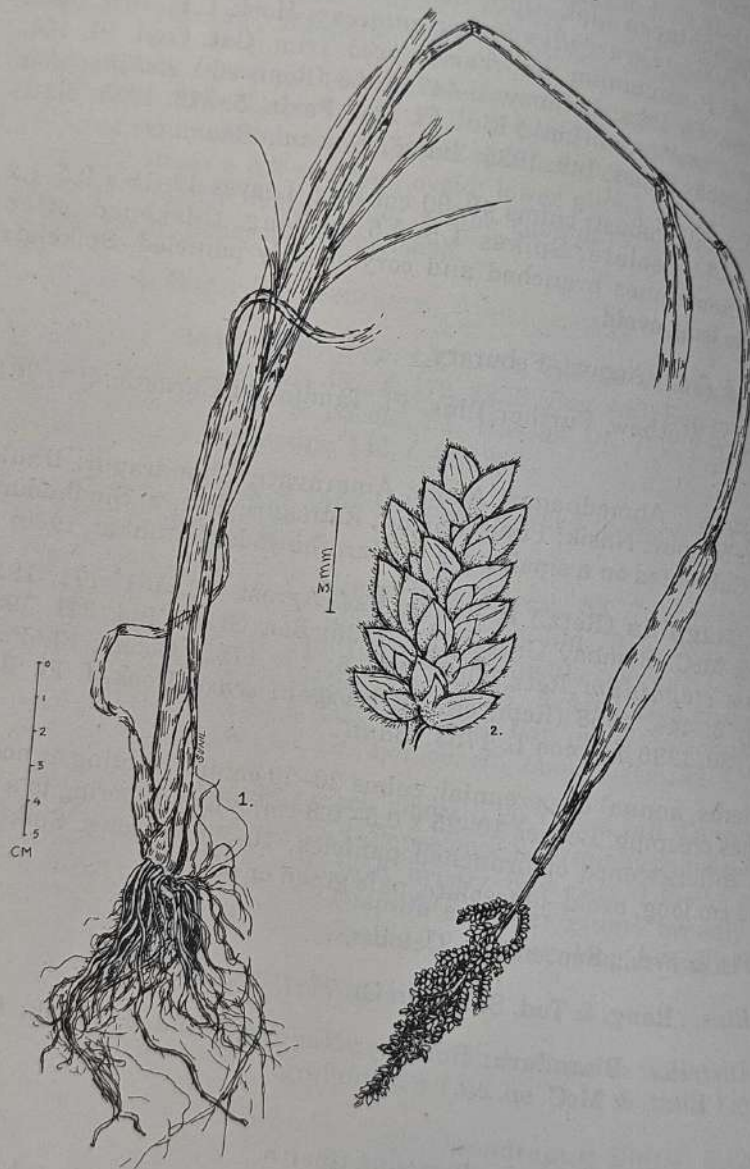
Fls. & Frts. : September–October.

Illus. : Rang. & Tad. S. Indian Gr. 77, f. 88. 1921.

Distrib. : Bhandara; Bombay; Nagpur; Nanded; Nasik; Pune; Satara (Blatt. & McC. op. cit.); Sindhudurg.

#### ELEUSINE Gaertn.

**Eleusine indica** (L.) Gaertn. Fruct. 1: 8. 1789; Hook. f. Fl. Brit. India 7: 293. 1896; Cooke, Fl. Pres. Bombay 3: 560. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 259. 1935; Bor, Grass. Ind. 493. 1960. *Cynosurus indicus* L. Sp. Pl. 72. 1753. 'Mahar-nachni'.



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Herbs, annual, erect, tufted c 25 cm high; culms slightly compressed. Leaves 8–12 x 0.2–0.3 cm, linear, flat. Spikes slightly 4. 0–5. 5 cm long. Spikelets c 0.3 cm long, ovoid or oblong, green. Grains oblong or globose.

*Fls. & Frts.* : September–February.

*Illus.* : Blatt. & McC. *op. cit.* t. 172; Mahesh. *Illus. Fl. Delhi* f. 261. 1966; Patunkar, *Grass. Marathw.* 238, f. 74. 1980; Matthew, *Illus. Fl. Tamilnadu Carnatic* 2: tt. 855 & 856. 1982; Ugemuge, *Fl. Nagpur Dt.* t. 184. 1986.

*Distrib.* : Common throughout as weed of cultivated fields.

#### CULTIVATED SPECIES :

***E. coracana*** (L.) Gaertn. *Fruct.* 1: 8, t. 1, f. 11. 1789; Hook. f. *Fl. Brit. India* 7: 294. 1896; Cooke, *Fl. Pres. Bombay* 3: 561. 1958 (Repr. ed.); Blatt. & McC. *Bombay Grass.* 260. 1935; Bor, *Grass. Ind.* 492. 1960. *Cynosurus coracanus* L. *Syst. Nat. ed.* 10. 2: 875. 1759. 'Nachni', 'Nagli', 'Ragi'.

Perennials, 25–100 cm tall, robust. Leaves 5–25 x 0.4–0.6 cm, linear-lanceolate, margins scabrous. Spikes 3–5, 3.5–6.0 cm long. Spikelets 0.6–0.7 cm long; lower glume c 0.5 cm long, linear-lanceolate, 3–5-nerved, apex mucronate; upper glume c 0.45 cm long, elliptic, glabrous, keel scabrid; lemmas 0.25–0.4 cm long, ovate-elliptic, 1–3-nerved, keel scabrid. Grains brownish-red.

*Fls. & Frts.* : September–November.

*Illus.* : Blatt. & McC. *op. cit.* t. 173; Matthew, *Further Illus. Fl. Tamilnadu Carnatic* 4: tt. 768 & 769. 1988.

*Distrib.* : Cultivated as food grain. Amaravati; Bombay; Kolhapur; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

#### ELIONURUS Kunth

***Elionurus royleanus*** Nees ex A. Rich. *Tent. Fl. Abyss.* 2: 471. 1851; Hook. f. *Fl. Brit. India* 7: 161. 1896; Cooke, *Fl. Pres. Bombay* 3: 491. 1958 (Repr. ed.); Blatt. & McC. *Bombay Grass.* 31. 1935; Bor, *Grass. Ind.* 145. 1960.

Leafy annuals, 7.5–30.0 cm high; nodes pubescent. Leaves 3.7–10.0 x 0.13 cm, linear-lanceolate, acute or acuminate; lower sheaths terete, upper spathiform; ligule membranous. Racemes 2.5–5.0 cm long, erect, yellowish-green or often variegated with purple, each

enclosed in a long, narrow, flattened sheath. Spikelets linear-subulate, sessile spikelets c 1.2 cm long; pedicellate spikelets: pedicels c 0.3 cm long.

*Fls. & Frts.* : August–November.

*Illus.* : Blatt. & McC. *op. cit.* t. 26; Patunkar, Grass. Marathw. 55, f. 15. 1980.

*Distrib.* : Aurangabad; Bhandara; Dhule; Satara.

#### ELYTROPHORUS P. Beauv.

**Elytrophorus spicatus** (Willd.) A. Camus in Lecomte, Fl. Gen. Indo Chine 7: 547. 1923; Bor, Grass. Ind. 493. 1960. *Dactylis spicata* Willd. in Ges. Naturf. Fr. Berlin, Neue Schrift. 3: 416. 1801. *Elytrophorus articulatus* P. Beauv. Ess. Agrost. 67, t. 14, f. 2. 1812; Hook. f. Fl. Brit. India 7: 306. 1896; Cooke, Fl. Pres. Bombay 3: 567. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 276. 1935. 'Jangli-rala'.

Herbs, annual; culms 12–35 cm tall, erect; roots fibrous, dense. Leaves 5–17 x 0.15–0.5 cm, linear, acute, smooth. Inflorescence 1.5–3.0 cm long, interrupted. Spikelets c 0.5 cm long, ovoid. Grains oblong or fusiform.

*Fls. & Frts.* : January–March.

*Illus.* : Blatt. & McC. *op. cit.* t. 188; Patunkar, Grass. Marathw. 240, f. 75. 1980; Matthew, Illus. Fl. Tamilnadu Carnatic 2: tt. 857 & 858. 1982.

*Distrib.* : Aurangabad; Bhandara; Bombay; Kolhapur; Nagpur; Nanded; Nasik (Blatt. & McC. *op. cit.*); Pune; Raigad; Ratnagiri; Sindhudurg; Thane.

#### ENTEROPOGON Nees

**Enteropogon prieurii** (Kunth) W. D. Clayton in Kew Bull. 37: 419. 1982. *Chloris prieurii* Kunth, Rev. Gram. 2: 441, t. 134. 1831; Bor, Grass. Ind. 466. 1960; Shah & Badrinath in J. Econ. Tax. Bot. 6: 139. 1985.

Annuals; culms up to 85 cm high, erect or geniculately ascending. Leaves flat, up to 30.0 x 0.2–0.5 cm, tapering at the apex. Inflorescence of 4–9 closely or loosely digitate spikes, 4–12 cm long. Spikelets 4–6 flowered, 4–6-awned. Caryopsis dorsally compressed.

Fls. & Frts. : October–December.

Distrib. : Thane (Shah & Badrinath, *op. cit.*).

ERAGROSTIELLA Bor

1. Keels of palea broadly winged; leaves narrow, almost filiform when rolled or folded

... *E. bifaria*

1. Keels of palea not broadly winged; leaves convolute, filiform, or broader and shorter, complicate

... *E. brachyphylla*

**Eragrostiella bifaria** (Vahl) Bor in Indian Forester 66: 270. 1940 & Grass. Ind. 494. 1960. *Poa bifaria* Vahl, Symb. Bot. 2:19. 1791. *Eragrostis coromandeliana* (Koen. ex Rottl.) Trin. in Mem. Acad. Sci. Petersb. 6, 1: 415. 1830; Stapf in Hook. f. Fl. Brit. India 7: 326. 1896. *E. bifaria* (Vahl) Wight ex Steud. Syn. Pl. Glum. 1: 246. 1854; Stapf in Hook. f. *op. cit.* 325; Cooke, Fl. Pres. Bombay 3: 550. 1958 ( Repr. ed.); Blatt. & McC. Bombay Grass. 241. 1935.

Herbs, 30–90 cm high, perennial, densely tufted. Leaves filiform, 4–20 cm long. Spikes terminal, solitary. Spikelets secund, 0.65–0.92 cm long. Grain 0.07–0.09 cm long, ellipsoid.

Fls. & Frts. : August–January.

Illus. : Patunkar, Grass. Marathw. 242, f. 76. 1980; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 863. 1982; Ugemuge, Fl. Nagpur Dt. t. 185. 1986.

Distrib. : Common throughout in open grasslands.

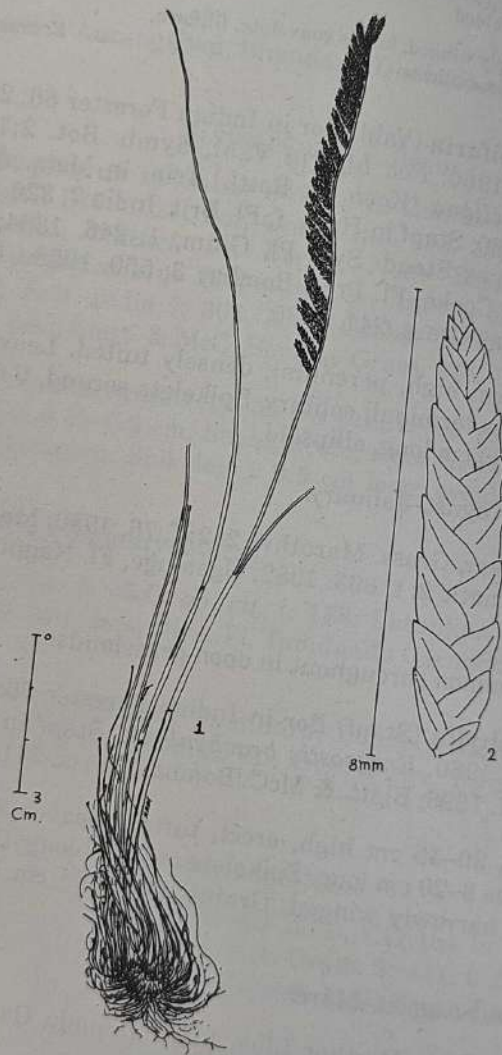
**E. brachyphylla** (Stapf) Bor in Indian Forester 66: 270. 1940 & Grass. Ind. 494. 1960. *Eragrostis brachyphylla* Stapf in Hook. f. Fl. Brit. India 7: 327. 1896; Blatt. & McC. Bombay Grass. 241. 1935.

Perennials, 20–35 cm high, erect, tufted. Leaves 2–6 x 0.15–0.2 cm, linear. Spikes 8–20 cm long. Spikelets ovoid-oblong; florets up to 20; keels of paleas narrowly winged. Grains 0.05–0.08 cm long, subovoid, reddish-brown.

Fls. & Frts. : August–March.

Illus. : Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 770. 1988.

Distrib. : Akola; Amaravati; Aurangabad; Buldhana; Chandrapur; Dhule; Jalgaon; Nagpur; Pune; Satara; Yavatmal.



*Eragrostiella brachyphylla* (Stapf) Bor  
1. Habit 2. Spikelets

FLORA OF MAHARASHTRA STATE

ERAGROSTIS N. M. Wolf

479

1. Spikelets not breaking up at maturity
1. Spikelets breaking up at maturity : ... *E. lef*
2. Spikelets breaking up from above downwards; rhachis fragile :
  3. Lemma ciliate on margins
  3. Lemma not ciliate on margins : ... *E. coarctata*
  4. Keels of paleas scabrid or smooth, not ciliate :
    5. Panicles oblong or linear, not thyriform, less than 15 cm wide ... *E. aspera*
    5. Panicles oblong or linear, not thyriform, less than 15 cm wide ... *E. japonica*
  4. Keels of paleas more or less ciliate :
    6. Panicles effuse :
      7. Culms and leaves viscous ... *E. viscosa*
      7. Culms and leaves not viscous ... *E. tenella*
    6. Panicles spiciform, or compact and dense :
      8. Annuals; lemmas ciliate (at least the upper) on keels ... *E. ciliaris*
      8. Perennials; lemmas not ciliate on keels :
        9. Lemmas 0.125 cm long, rounded at apex ... *E. riparia*
        9. Lemmas 0.175 cm long, acute at apex ... *E. coarctata*
2. Spikelets breaking up from below upwards; rhachis tough :
  10. Perennials :
    11. Lemmas up to 0.18 cm long :
      12. Spikelets 0.1-0.125 cm wide; paleas persistent ... *E. nutans*
      12. Spikelets 0.2-0.25 cm wide; paleas deciduous ... *E. atrovirens*
    11. Lemmas over 0.2 cm long :
      13. Pedicels of spikelets with a glandular band ... *E. tenuifolia*
      13. Pedicels of spikelets devoid of a glandular band ... *E. nigra*
  10. Annuals :
    14. Lemmas up to 0.15 cm long :

15. Plants glandular :
16. Lowest branches of the panicles fascicled or subwhorled ...
16. Lowest branches not whorled ... *E. pilosa*
15. Plants eglandular :
17. Spikelets not fascicled, seated on long pedicels in ample panicles with filiform branches which are fascicled or subwhorled at lowest node ... *E. minor*
17. Spikelets more or less fascicled on primary or secondary branches, all pointing forwards, or shortly pedicelled in narrow recemes : ... *E. pilosa*
18. Tip of lemmas acute or obtuse; culms 20-40 cm tall ...
18. Tips of lemmas acute, seen from the side almost acuminate; dwarf plants not above 12 cm tall ... *E. gangetica*
14. Lemmas over 0.15 cm long : ... *E. multicaulis*
19. Plants glandular :
20. Pedicels with a crateriform gland ...
20. Pedicels without a crateriform gland : ... *E. minor*
21. Spikelets 0.2-0.4 cm wide, crowded or loose, pale, often slate- or leaden-grey in colour; lemmas lanceolate or ovoid-oblong, obtuse, 0.2-0.22 cm long, not diminishing in length upwards; leaves almost always with raised glands on keels and margins; sheaths often with irregularly distributed pitted glands; grains globose, 0.05 cm in diam. ...
21. Spikelets 0.15 cm wide in ample panicles, olive- to leaden-grey; lower glume 0.15 cm long, upper glume 0.2-0.25 cm long; lemmas lanceolate-acute, lowest 0.25-0.28 cm long, rest diminishing in length upwards; leaves and lemmas eglandular; anthers 0.02-0.03 cm long; grain 0.1-0.15 cm long, ovoid-oblong ... *E. cilianensis*
19. Plants devoid of glands : ... *E. tef*
22. Spikelets 0.2 cm or more wide, ovoid or ovoid-oblong :
23. Paleas deciduous; sheaths not bearded at mouth; grains obovoid or ellipsoid, compressed ...
23. Paleas persistent; sheaths bearded at mouth; grains subglobose ... *E. unioloides*
22. Spikelets 0.075-0.2 cm wide : ... *E. cilianensis*
24. Spikelets narrow, less than 0.15 cm wide ... *E. pilosa*

24. Spikelets b  
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*Poa cilian*  
Host. Gran  
7: 320. 189

24. Spikelets broad, 0.15–0.2 cm wide :  
 25. Spikelets seated on pedicels over 0.5 cm long;  
 lemmas broadly ovate, acute ... *E. tremula*  
 25. Spikelets seated on pedicels not more than 0.2 cm long;  
 lemmas narrower, elliptic-or lanceolate, acute ... *E. minor*

*Eragrostis aspera* (Jacq.) Nees, Fl. Afr. Austr. 408. 1841; Stapf in Hook. f. Fl. Brit. India 7: 314. 1896; Cooke, Fl. Pres. Bombay 3: 544. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 230. 1935; Bor, Grass. Ind. 501. 1960. *Poa aspera* Jacq. Hort. Vindob. 3: 32, t. 56. 1776.

Annuals, 20–60 cm high, tufted. Leaves 20–35 x 0.5–0.7 cm, linear, flat; sheaths bearded at mouth; ligule a fringe of long hairs. Panicle lax, open, thyriform, oblong to obovate-oblong. Spikelets c 0.5 cm long. Grains 0.03–0.04 cm long, subglobose.

Fls. & Frts. : October–December.

Illus. : Bor, *op.cit.* 502, f. 55; W. D. Clayton in Hepper, Fl. W. Trop. Afr. 3 (2): 388, f. 429. 1972; Ugemuge, Fl. Nagpur Dt. t. 186. 1986.

Distrib. : Aurangabad; Konkan (Cooke, *op.cit.*); S. Konkan (Bor, *op.cit.*); Nagpur; Pune; Satara; Yatavmal.

*E. atrovirens* (Desf.) Trin. ex Steud. Nom. Bot. ed. 2, 1: 562. 1840; Bor, Grass. Ind. 503. 1960. *Poa atrovirens* Desf. Fl. Atlant. 1: 73, t. 14. 1798.

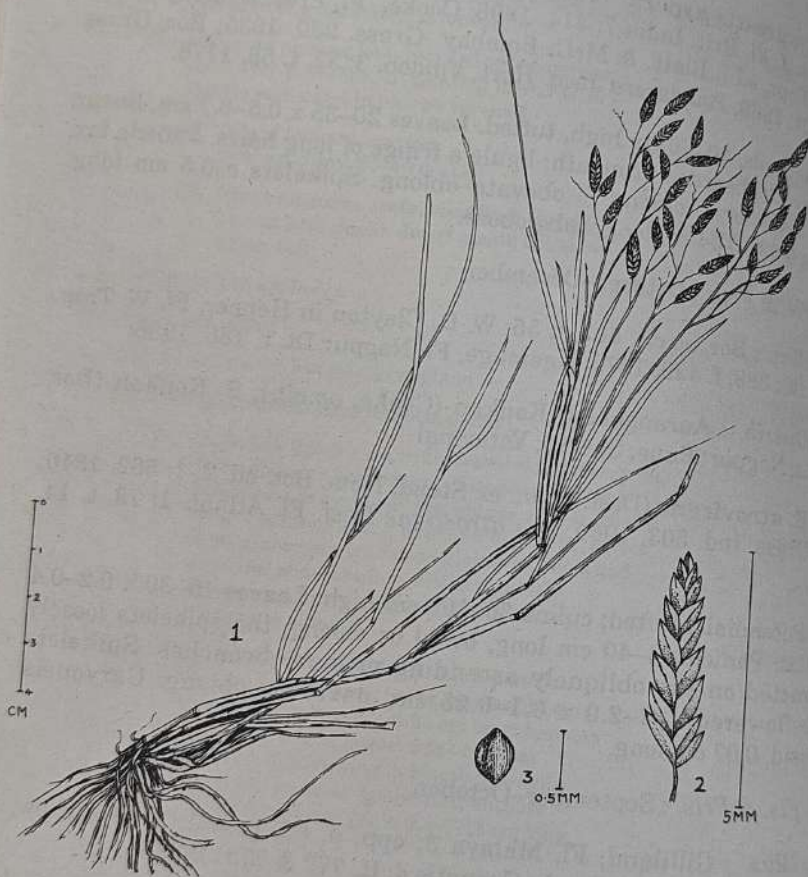
Perennials, tufted; culms 30–100 cm high. Leaves 15–30 x 0.2–0.4 cm, flat. Panicles 4–40 cm long, ovoid or oblong, the spikelets loosely contracted on the obliquely ascending primary branches. Spikelets 6–50-flowered, 0.3–2.0 x 0.1–0.25 cm, narrowly oblong. Caryopsis ellipsoid, 0.07 cm long.

Fls. & Frts. : September–October.

Illus. : Gilliland, Fl. Malaya 3: opp. p. 68, t. 1. 1971; Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: tt. 772 & 773. 1988.

Distrib. : Rare. Raigad; Sindhidurg (Salunkhe, 1995).

*E. cilianensis* (All.) Vignolo–Lutati ex F. T. Hubb. in Philipp. J. Sci. Bot. 8: 159. 1913; Blatt. & McC. Bombay Grass. 237. 1935; Bor, Grass. Ind. 503. 1960; T. A. Cope in Nasir & Ali, Fl. Pak. 143: 93. 1982. *Poa cilianensis* All. Fl. Pedem. 2: 246, t. 91, f. 2. 1785. *Eragrostis major* Host. Gram. Austral. 4: 14, t. 24. 1809; Stapf in Hook. f. Fl. Brit. India 7: 320. 1896; Cooke, Fl. Pres. Bombay 3: 548. 1958 (Repr. ed.).



*Eragrostis gangetica* (Roxb.) Steud.  
1. Habit 2. Spikelet 3. Nut

Annuals, 30-  
lanceolate. Panicle  
lemmas c 0.2 cm  
brown.

*Fls. & Frts.*

*Illus.* : Blatt  
94. f. 11.

*Distrib.* : A  
(Blatt. & McC. o  
Pune; Ratnagiri

*E. ciliaris*  
Stapf in Hook.  
Grass. 231. 193  
Nat. ed. 10. 2:  
Fl. Orient. 5: ?  
Bombay 3: 545

Herbs, an  
prostrate with  
linear, acum  
oblong, lobed  
compressed. C

*Fls. & Fr*

*Illus.* : B  
1966.

*Distrib.*

*E. coar*  
Grass. Ind. 5

Herbs,  
Leaves 5-25  
ridge of hai  
whorled. Sp

*Fls. &*

*Distri*  
1995); Yava

*E. ga*  
Fl. Pres. B

Annuals, 30–90 cm high, tufted. Leaves 5–30 x 0.5–0.9 cm, linear-lanceolate. Panicles 10–20 cm long. Spikelets 0.5–1.75 x 0.25–0.35 cm; lemmas c 0.2 cm long. Grains c 0.03 cm in diam., globose, reddish-brown.

*Fls. & Frts.* : August–May.

*Illus.* : Blatt. & McC. *op.cit.* t. 257; T. A. Cope in Nasir & Ali, *op.cit.* 94. f. 11.

*Distrib.* : Ahmednagar; Akola; Aurangabad; Bhandara; Bombay; (Blatt. & McC. *op.cit.*); Chandrapur; Dhule; Nagpur; Nanded; Parbhani; Pune; Ratnagiri; Sangli; Sindhudurg; Thane.

*E. ciliaris* (L.) R. Br. in Tuckey, Narr. Exp. Congo, App. 478. 1818; Stapf in Hook. f. Fl. Brit. India 7: 314. 1896; Blatt. & McC. Bombay Grass. 231. 1935 p.p.; Bor, Grass. Ind. 506. 1960. *Poa ciliaris* L. Syst. Nat. ed. 10. 2: 875. 1759. *Eragrostis ciliaris* var. *brachystachya* Boiss. Fl. Orient. 5: 582. 1884; Stapf in Hook. f. *op.cit.* 315; Cooke, Fl. Pres. Bombay 3: 545. 1958 (Repr. ed.); Bor, *op.cit.* 'Undir punjo'.

Herbs, annual; culms tufted, 8–45 cm tall, erect, ascending or prostrate with short floriferous branches. Leaves 3–8 x 0.15–0.25 cm, linear, acuminate; sheaths and ligules hairy. Panicles 1–8 cm long, oblong, lobed or interrupted. Spikelets 3–9-flowered, broadly ovate, compressed. Caryopsis c 0.5 cm long, oblong-ovoid.

*Fls. & Frts.* : September–January.

*Illus.* : Blatt. & McC. *op.cit.* t. 154; Mahesh. Illus. Fl. Delhi f. 252. 1966.

*Distrib.* : Common in all districts.

*E. coarctata* Stapf in Hook. f. Fl. Brit. India 7: 313. 1896; Bor, Grass. Ind. 507. 1960.

Herbs, 10–60 cm tall, annuals, geniculately ascending; culms wiry. Leaves 5–25 cm long, linear, finely acuminate above; ligule a narrow ridge of hairs. Panicles dense, subspiciform, 5–15 x 5 cm, branches whorled. Spikelets 0.25–0.4 cm long, 5–13-flowered, tinged with purple.

*Fls. & Frts.* : September–February.

*Distrib.* : Rare. Nagpur; Osmanabad; Sindhudurg (Salunkhe, 1995); Yavatmal.

*E. gangetica* (Roxb.) Steud. Syn. Pl. Glum. 1: 266. 1854; Cooke, Fl. Pres. Bombay 3: 547. 1958 (Repr. ed.) p. p.; Blatt. & McC. Bombay

Grass. 236. 1935 p. p.; Bor, Grass. Ind. 508. 1960. *Poa gangetica* Roth. Fl. Ind. 1: 341. 1820. *Eragrostis stenophylla* Hochst. ex Miq. in Verh. Konink.-Ned. Inst. 3, 4: 39. 1851 p. p.; Stapf in Hook. f. Fl. Brit. India 7: 318. 1896.

Herbs, perennial, tufted, 30–40 cm high. Leaves up to 20 cm long, few, narrow, convolute; mouth of sheaths bearded; ligule a minutely ciliolate rim. Panicles 5–15 cm long, oblong. Spikelets 0.4–0.6 cm long. Grains c 0.05 cm long, oblong, brown.

Fls. & Frts. : July–March.

Illus. : Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 774. 1988.

Distrib. : Common in all districts.

**E. japonica** (Thunb.) Trin. in Mem. Acad. Sci. Petersb. 6, 1: 405. 1831; Bor, Grass. Ind. 509. 1960; T. A. Cope in Nasir & Ali, Fl. Pak. 143: 88. 1982. *Poa japonica* Thunb. Fl. Jap. 51. 1784. *Eragrostis diarrhena* (Schult.) Steud. Syn. Pl. Glum. 1: 266. 1854; Bor, op.cit. 507. E. *diplachnoides* Steud. op.cit. 268; Bor, op.cit. 508. E. *interrupta* sensu Stapf in Hook. f. Fl. Brit. India 7: 316. 1896 non (R. Br.) P. Beauv 1812; Blatt. & McC. Bombay Grass. 233. 1935 p. p. E. *interrupta* var. *diarrhena* (Schult.) Stapf in Hook. f. op.cit. E. *interrupta* var. *diplachnoides* (Steud.) Stapf in Hook. f. op.cit. E. *interrupta* var. *koenigii* Stapf in Hook. f. op.cit.; Cooke, Fl. Pres. Bombay 3: 546. 1958 (Repr. ed.). E. *interrupta* var. *tenuissima* Stapf in Hook. f. op.cit. E. *namaquensis* Schrad. var. *diplachnoides* (Steud.) W. D. Clayton in Kew Bull. 25: 251. 1971. 'Chiksi'.

Herbs, annual or perennial, 30–150 cm high, erect, strongly tufted; culms stout, branched. Leaves 5–30 x 0.1–0.5 cm, linear, flat; ligule a fimbriate membrane. Panicles 15–50 cm long, effuse or contracted with solitary or 2–3-nate branches. Spikelets 0.1–4.0 cm long, linear-oblong, ovoid or linear, red. Caryopsis ellipsoid, reddish-brown.

Fls. & Frts. : September–March.

Illus. : Mahesh. Illus. Fl. Delhi f. 254. 1966 (*Eragrostis diarrhena*); Matthew, Illus. Fl. Tamilnadu Carnatic 2: tt. 864 & 865. 1982.

Distrib. : Common in all districts.

**E. minor** Host. Gram. Austral. 4: 15. 1809; Stapf in Hook. f. Fl. Brit. India 7: 321. 1896; Cooke, Fl. Pres. Bombay 3: 548. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 288. 1935; T. A. Cope in Nasir & Ali, Fl. Pak. 143: 95. 1982. E. *poaeoides* P. Beauv. Ess. Agrost. 162. 1812;

Bor, Grass. Ind. 512. 1960; 371. 1908; Bor, op.cit. 1969.

Annuals, erect ascending. Leaves 7–10 cm long, sheaths shortly bearded. Panicles 5–25 x 2–5 cm, oblong. Caryopsis c 0.1 cm long.

Fls. & Frts. : September–March.

Illus. : Blatt. & McC. Bombay Grass. 288. 1935; Patunkar, Grass. Ind. 510. 1960.

Distrib. : Common in all districts.

**E. multicaulis** (L.) Steud. Ind. 510. 1960.

Culms tufted, up to 3.5 x 0.1 cm. Leaves 5–10 cm long, ligule a shallow notch. Panicles ultimately exserted, not more than 1 cm long, quadrate-cylindrical.

Distrib. : Bombay.

**E. nigra** (L.) Hook. f. Fl. Brit. India 7: 318. 1896.

Herbs, c 1 m high. Leaves 5–10 cm long, spikelets slate-grey. Upper glume c 0.5 cm long, brownish.

Fls. & Frts. : September–March.

Illus. : Mahesh. Illus. Fl. Delhi f. 254. 1966; Matthew, Illus. Fl. Tamilnadu Carnatic 2: tt. 864 & 865. 1982.

Distrib. : Common in all districts.

**E. nutans** (L.) Steud. Syn. Pl. Glum. 1: 266. 1854; Blatt. & McC. Bombay Grass. 288. 1935; T. A. Cope in Nasir & Ali, Fl. Pak. 143: 95. 1982. E. *poaeoides* P. Beauv. Ess. Agrost. 162. 1812;

Bor, Grass. Ind. 512. 1960. *E. pappiana* Chiov. in Ann. Ist. Bot. Roma 8: 371. 1908; Bor, *op.cit.* 511; Jain in Bull. Bot. Surv. India 10: 161. (1968) 1969.

Annuals, erect; culms tufted, 30–45 cm high, geniculately ascending. Leaves 7–15 x 0.3–0.7 cm, linear, glandular along margins; sheaths shortly bearded at mouth; ligule a pubescent ridge. Panicles 5–25 x 2–5 cm, oblong. Spikelets 0.3–1.0 x 0.1 cm, linear or ovoid. Caryopsis c 0.1 cm long ellipsoid, reddish-brown.

*Fls. & Frts.* : September–December.

*Illus.* : Blatt. & McC. *op.cit.* t. 158; Mahesh. *Illus. Fl. Delhi* f. 249. 1966; Patunkar, Grass. Marathw. 252, f. 77. 1980 (*E. poaeoides*).

*Distrib.* : Common throughout in open grasslands.

***E. multicaulis*** Steud. Syn. Pl. Glum. 1: 426. 1855; Bor, Grass. Ind. 510. 1960.

Culms tufted. Leaf sheaths loose, striate, 1.0–1.5 cm long. Leaves up to 3.5 x 0.1 cm, linear-acuminate, margins with some scaberulae; ligule a shallow fimbriate rim. Inflorescence a terminal panicle, ultimately exserted, of successive pseudo-whorls of spikelets, often of not more than 1 branch. Spikelets 3–6-flowered. Grains brown, quadrate-cylindrical, 0.05 cm long.

*Distrib.* : Bombay (Bor, *op.cit.*).

***E. nigra*** Nees ex Steud. Syn. Pl. Glum. 1: 267. 1854; Stapf in Hook. f. Fl. Brit. India 7 : 324. 1896; Bor, Grass. Ind. 511. 1960.

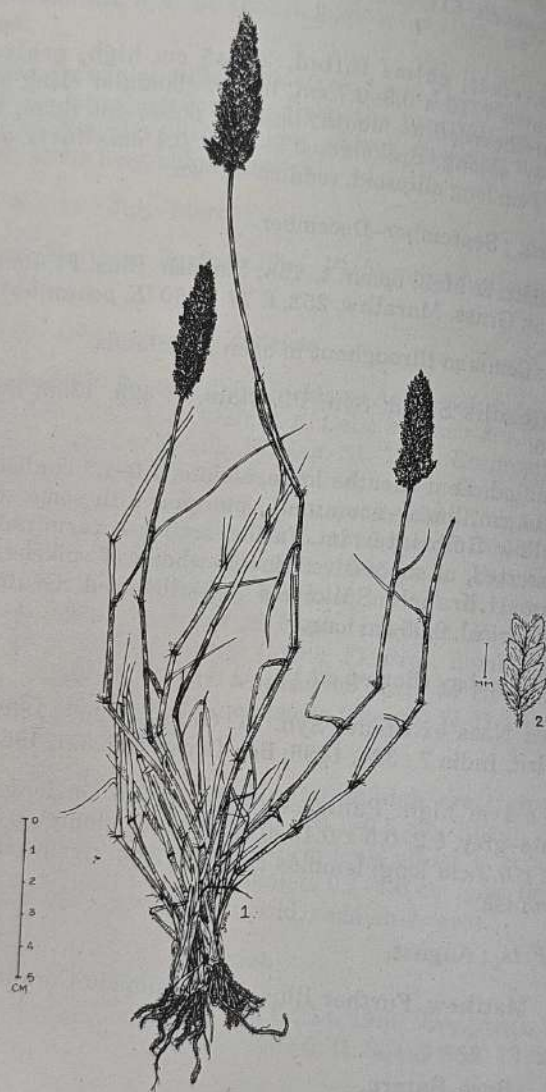
Herbs, c 1 m high. Panicles effuse, 17–20 cm long, drooping. Spikelets slate-grey, 0.2–0.5 x 0.15–0.2 cm; lower glume c 0.15 cm long, upper glume c 0.2 cm long; lemmas c 0.2 cm long. Grains oblong, c 0.1 cm long, brownish.

*Fls. & Frts.* : August.

*Illus.* : Matthew, Further *Illus. Fl. Tamilnadu Carnatic* 4: t. 776. 1988.

*Distrib.* : Rare. Satara.

***E. nutans*** (Retz.) Nees ex Steud. Nom. Bot. ed. 2, 563. 1840; Blatt. & McC. Bombay Grass. 237. 1935; Bor, Grass. Ind. 511. 1960. *Poa nutans* Retz. Obs. Bot. 4 : 19. 1786. *Eragrostis elegantula* Nees ex Steud. Syn. Pl. Glum. 1: 266. 1854; Stapf in Hook. f. Fl. Brit. India 7 : 318. 1896.



*Eragrostis riparia* (Willd.) Nees  
1. Habit 2. Spikelet

Herbs, densely tu  
ascending. Leaves na  
membranous. Panicles  
long, linear-oblong.  
brown.

Fls. & Frts. : Oc

Illus. : Matthe  
1988.

Distrib. : Bom  
op.cit.) ; Pune; Satar

*E. pilosa* (L.)  
Hook. f. Fl. Brit. I  
1958 (Repr. ed.); B  
Ind. 512. 1960. Poa

Herbs, ann  
ascending or ere  
bearded at mouth  
Spikelets 0.2-0  
reddish-brown, la

Fls. & Frts.

Illus. : Mal  
Illus. Fl. Tamiln

Distrib. :  
along margins o

*E. riparia*  
513. 1960; Dh  
*riparia* Willd.  
*Eragrostis tene*  
315. 1896; Co  
McC. Bombay

Herbs, p  
20-40 cm lon  
Panicles con  
crowded, oblo

Fls. & F

Illus. :  
1988.

Herbs, densely tufted; culms 15–60 cm tall, erect or geniculately ascending. Leaves narrow, convolute; sheaths smooth; ligule narrow, membranous. Panicles ovoid, oblong or sublinear. Spikelets 0.4–0.6 cm long, linear-oblong. Grains globose or globosely ellipsoid, reddish-brown.

*Fls. & Frts.* : October–December.

*Illus.* : Matthew, Further *Illus. Fl. Tamilnadu Carnatic* 4: t. 777. 1988.

*Distrib.* : Bombay; Chandrapur; Nagpur; Nasik (Blatt. & McC. *op.cit.*); Pune; Satara; Sindhudurg.

**E. pilosa** (L.) P. Beauv. *Ess. Agrost.* 71, 162, 175. 1812; Stapf in Hook. f. *Fl. Brit. India* 7: 323. 1896; Cooke, *Fl. Pres. Bombay* 3: 550. 1958 (Repr. ed.); Blatt. & McC. *Bombay Grass.* 241. 1935; Bor, *Grass. Ind.* 512. 1960. *Poa pilosa* L. *Sp. Pl.* 68. 1753.

Herbs, annual, tufted, 20–30 cm high; culms geniculately ascending or erect. Leaves 5.5–13.5 x 0.1–0.3 cm, linear; sheaths bearded at mouth; ligule a softly hairy ridge. Panicles 8–25 cm long. Spikelets 0.2–0.5 cm long, purplish-green. Caryopsis ellipsoid, reddish-brown, laterally compressed.

*Fls. & Frts.* : July–October.

*Illus.* : Mahesh. *Illus. Fl. Delhi* f. 251. 1966; Matthew, Further *Illus. Fl. Tamilnadu Carnatic* 4: t. 778. 1988.

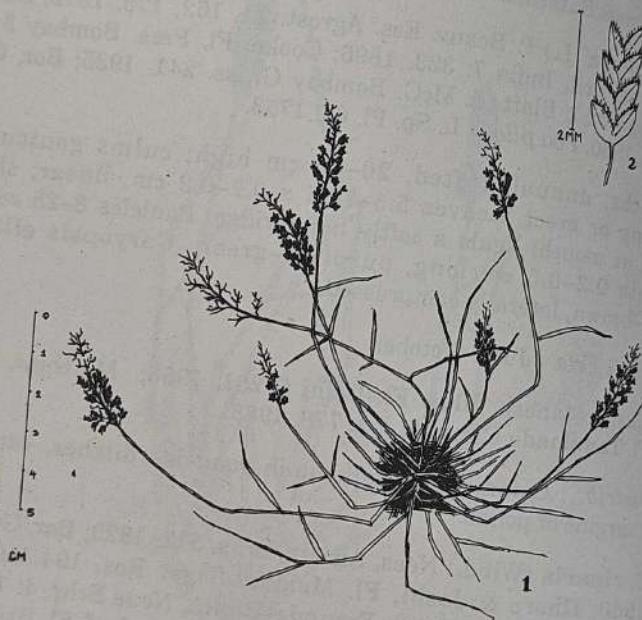
*Distrib.* : Common throughout in roadside ditches, canals and along margins of ponds.

**E. riparia** (Willd.) Nees, *Agrost. Bras.* 512. 1829; Bor, *Grass. Ind.* 513. 1960; Dhore & Joshi, *Fl. Melghat Tiger Res.* 194. 1988. *Poa riparia* Willd. in *Ges. Natur. Freunde–Berlin, Neue Schr.* 4: 185. 1803. *Eragrostis tenella* var. *riparia* (Willd.) Stapf in Hook. f. *Fl. Brit. India* 7: 315. 1896; Cooke, *Fl. Pres. Bombay* 3: 545. 1958 (Repr. ed.); Blatt. & McC. *Bombay Grass.* 233. 1935.

Herbs, perennial, tufted; culms decumbent from base or suberect, 20–40 cm long. Leaves linear; sheaths smooth; ligule as a ciliate rim. Panicles contracted, 2.5–7.5 x 0.43–0.75 cm, subcylindric. Spikelets crowded, oblong, tinged with pink. Grains 0.04 cm long, ovoid.

*Fls. & Frts.* : August–November.

*Illus.* : Matthew, Further *Illus. Fl. Tamilnadu Carnatic* 4: t. 780. 1988.



*Eragrostis tenella* (L.) P. Beauv. ex R. & S. var. *insularis* C. E. Hubb.  
1. Habit 2. Spikelet

Distrib. : Am

*E. tef* (Zucc.  
Grass. Ind. 513  
Maharashtra 59.  
1774.

Annuals. Le  
in an ample pan  
upper glume 0.  
0.1-0.15 cm long

Fls. & Frts.

Illus. : Sree

Distrib. : I

*E. tenella*  
Hook. f. Fl. Bri  
1935; Bor, Gra  
*Eragrostis tene*  
*tenella* var. *plu*  
Bombay 3: 545

1. Panicles loose  
hairy at node

1. Panicles cont

var. *tene*

Herbs,  
narrowly line  
cm long, oblo

Fls. & F

Illus. : I  
1971.

Distrib.

var. *in*  
Grass. Ind  
Maharashtr

Panicle

Illus.  
1988.

*Distrib.* : Amaravati; Sindhudurg.

*E. tef* (Zucc.) Trotter in Bull. Soc. Bot. Ital. 62. 1918 (in Obs.); Bor, Grass. Ind. 513. 1960; U. R. Deshpande & N. P. Singh, Grass. Maharashtra 59.1986. *Poa tef* Zucc. Diss. Ist. Pianta Panizz. Abiss. 1774.

Annuals. Leaves and lemmas eglandular. Spikelets c 0.15 cm wide, in an ample panicle, olive-lead-grey; lower glume c 0.15 cm long, upper glume 0.2-0.25 cm long; lemmas lanceolate-acute. Grains 0.1-0.15 cm long, ovoid-oblong.

*Fls. & Frts.* : September-December.

*Illus.* : Sreek. & Nair, Fl. Kerala Grass. 359, t. 80. 1991.

*Distrib.* : Introduced. Bombay.

*E. tenella* (L.) P. Beauv. ex R. & S. Syst. Veg. 2: 576. 1817; Stapf in Hook. f. Fl. Brit. India 7: 315. 1896; Blatt. & McC. Bombay Grass. 232. 1935; Bor, Grass. Ind. 513. 1960. *Poa tenella* L. Sp. Pl. 69. 1753. *Eragrostis tenella* var. *breviculmis* Stapf in Hook. f. op.cit. 316. *E. tenella* var. *plumosa* (Retz.) Stapf in Hook. f. op.cit. 315; Cooke, Fl. Pres. Bombay 3: 545. 1958 (Repr. ed.); Blatt. & McC. op.cit.

- |  |     |                       |
|--|-----|-----------------------|
| 1. Panicles loose with spreading branches; axis more or less hairy at nodes. | ... | var. <i>tenella</i>   |
| 1. Panicles contracted with ascending branches; axis glabrous                | ... | var. <i>insularis</i> |

var. *tenella*. 'Bakralu', 'Belakuda', 'Waya'.

Herbs, 15-30 cm high, tufted. Leaves 2.5-8.0 x 0.2-0.4 cm, narrowly linear. Panicles 8-13 cm long, ovoid-oblong. Spikelets 0.2-0.3 cm long, oblong, red. Caryopsis ovoid, reddish-brown.

*Fls. & Frts.* : September-March.

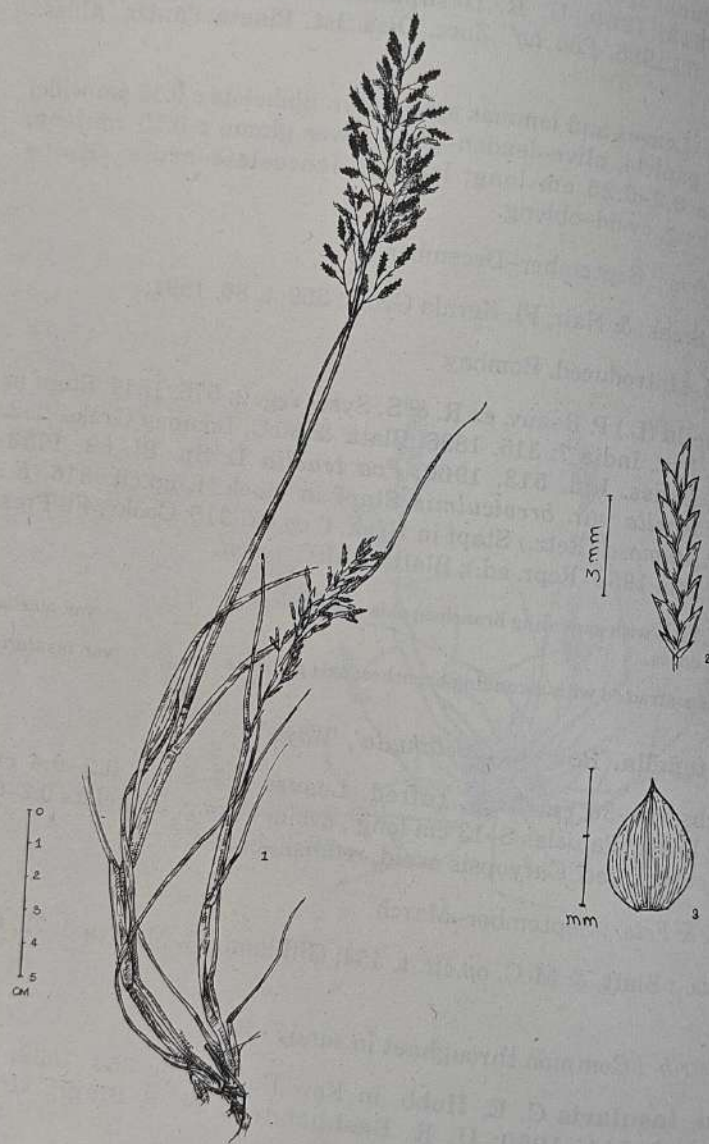
*Illus.* : Blatt. & McC. op.cit. t. 154; Gililand, Fl. Malaya 3: 72, f. 8. 1971.

*Distrib.* : Common throughout in sandy soils.

var. *insularis* C. E. Hubb. in Kew Bull. 1939: 654. 1939; Bor, Grass. Ind. 514. 1960; U. R. Deshpande & N. P. Singh, Grass. Maharashtra 59.1986.

Panicles effuse, contracted with ascending branches; axis glabrous.

*Illus.* : Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 781. 1988.



*Eragrostis tenuifolia* Hochst. ex Steud.  
1. Habit 2. Spikelet 3. Lemma

Distrib

*E. ten*  
in Hook. f. 1  
1958 (Repr.  
Ind. 514. 19

Herbs  
linear-lan  
0.7-1.2 cm

Fls. &

Illus.  
1988.

Distr  
Osmanaba

*E. tr*  
Hook. f. F  
1958 (Rep  
Ind. 514.

Ann  
scaberulo  
long. Spil  
cm long,  
3-nerved

Fls.

Illu

Dis  
Thane; Y

*E.*  
Blatt. &  
*Poa unio*  
Hook. f.  
Cooke,  
'Chimar

He  
ascendi  
absent  
0.2-0.7  
reddish

*Distrib.* : Rare. Pune.

**E. tenuifolia** Hochst. ex Steud. Syn. Pl. Glum. 1: 268. 1854; Stapf in Hook. f. Fl. Brit. India 7: 322. 1896; Cooke, Fl. Pres. Bombay 3: 549. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 240. 1935; Bor, Grass. Ind. 514. 1960.

Herbs, perennial, tufted up to 1 m high. Leaves 10.0 x 0.4 cm, linear-lanceolate. Panicles 8–15 cm long, oblong or ovoid. Spikelets 0.7–1.2 cm long, linear. Grains ovoid-oblong, reddish-brown.

*Fls. & Frts.* : September–October.

*Illus.* : Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 782. 1988.

*Distrib.* : Amaravati; Aurangabad; Chandrapur; Kolhapur; Nasik; Osmanabad; Pune; Sangli; Satara.

**E. tremula** Hochst. ex Steud. Syn. Pl. Glum. 1: 269. 1854; Stapf in Hook. f. Fl. Brit. India 7: 320. 1896; Cooke, Fl. Pres. Bombay 3: 549. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 239. 1935; Bor, Grass. Ind. 514. 1960.

Annuals, 40–150 cm tall, tufted. Leaves 5–15 x 0.2–0.35 cm, linear, scaberulous on nerves above, glabrous beneath. Inflorescence 8–15 cm long. Spikelets 0.5–0.18 cm long, ellipsoid, 1-nerved; upper glumes 0.2 cm long, ovate, 1-nerved; lemmas 0.2–0.25 cm long, broadly ovate, 3-nerved. Grains c 0.08 cm long, ovoid.

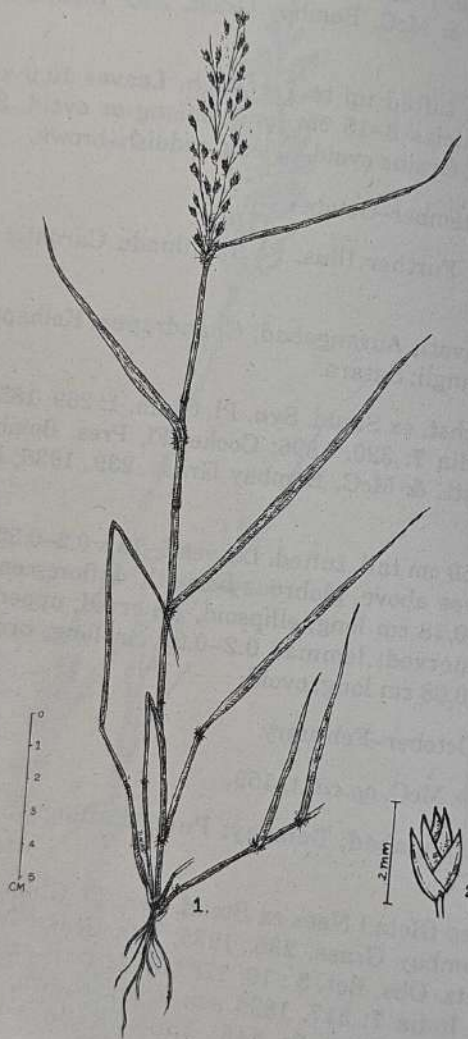
*Fls. & Frts.* : October–February.

*Illus.* : Blatt. & McC. *op.cit.* t. 159.

*Distrib.* : Aurangabad; Bombay; Pune; Ratnagiri; Sindhudurg; Thane; Yavatmal.

**E. unioloides** (Retz.) Nees ex Steud. Syn. Pl. Glum. 1: 264. 1854; Blatt. & McC. Bombay Grass. 235. 1935; Bor, Grass. Ind. 515. 1960. *Poa unioloides* Retz. Obs. Bot. 5: 19. 1789. *Eragrostis amabilis* Stapf in Hook. f. Fl. Brit. India 7: 317. 1896 non Wight & Arn. ex Nees 1838; Cooke, Fl. Pres. Bombay 3: 546. 1958 (Repr. ed.). 'Chidsi', 'Chimandara', 'Holpoho'.

Herbs, annual, tufted up to 25 cm high; culms erect or geniculate ascending. Leaves 3–7 x 0.2–0.4 cm, linear or linear-lanceolate; ligules absent or obscure. Panicles 4–8 cm long, oblong or ovoid. Spikelets 0.2–0.7 cm long, straw coloured, tinged with purple. Caryopsis ellipsoid, reddish-brown, laterally compressed.



*Eragrostis viscosa* (Retz.) Trin.  
1. Habit 2. Spikelet

Fls. & Fr  
Illus. : B  
1971; Ramam.

Distrib. :

*E. visco*  
1830; Blatt.  
1960. *Poa vi*  
*viscosa* (Retz  
Pres. Bomba

Herbs,  
rescence of  
Caryopsis n

Fls. &

Illus.  
1988.

Distri  
Jalgaon; K

1. Spikelet  
hairy, ol

1. Spikele

Eric

Bull. 30:  
Schimp.  
Thell. in  
312. 1960

Her  
rooting  
hairy. L  
margins  
cm long  
hispid v  
c 0.2 cm

Fl

D  
courses

*Fls. & Frts.* : August–February.

*Illus.* : Blatt. & McC. *op.cit.* t. 156; Gilliland, *Fl. Malaya* 3: 67, f. 7. 1971; Ramam. in Sald. & Nicols. *Fl. Hassan Dt.* 702, f. 111 F. 1976.

*Distrib.* : Common throughout in open grasslands.

**E. viscosa** (Retz.) Trin. in Mem. Acad. Sci. Petersb. 6, 1: 397. 1830; Blatt. & McC. *Bombay Grass*. 233. 1935; Bor, *Grass. Ind.* 515. 1960. *Poa viscosa* Retz. *Obs. Bot.* 4: 20. 1786. *Eragrostis tenella* var. *viscosa* (Retz.) Stapf in Hook. f. *Fl. Brit. India* 7: 315. 1896; Cooke, *Fl. Pres. Bombay* 3: 546. 1958 (Repr. ed.).

Herbs, tufted; culms slender. Leaves narrow, acuminate. Inflorescence of panicles. Spikelets 5–20–flowered, ovoid-oblong, purple. Caryopsis narrowly ellipsoid, pale brown, shining.

*Fls. & Frts.* : July–December.

*Illus.* : Matthew, Further *Illus. Fl. Tamilnadu Carnatic* 4: t. 784. 1988.

*Distrib.* : Bombay (Cooke, *op.cit.* & Bor, *op.cit.*); Buldhana; Dhule; Jalgaon; Kolhapur; Nasik; Pune; Sangli; Satara; Thane; Yavatmal.

#### ERIOCHLOA H. B. & K.

- |  |     |                     |
|--|-----|---------------------|
| 1. Spikelets shortly but distinctly awned; axis and pedicels hairy, often long-hairy | ... | <i>E. fatmensis</i> |
| 1. Spikelets not awned; axis and pedicels glabrous                                   | ... | <i>E. procera</i>   |

**Eriochloa fatmensis** (Hochst. & Steud.) W. D. Clayton in Kew Bull. 30: 107. 1975. *Panicum fatmensis* Hochst. & Steud. in Sched. Schimp. It. Un. 806. 1837. *Eriochloa nubica* (Steud.) Hack. & Stapf ex Thell. in Vierteljschrft. Nat. Ges. Zurich 64: 697. 1919; Bor, *Grass. Ind.* 312. 1960.

Herbs, perennial; culms 30–60 cm tall, geniculately ascending and rooting at lower nodes. Sheaths compressed, 1.5–7.0 cm long; ligule hairy. Leaves 0.3–0.6 cm broad, linear-lanceolate, scaberulous along margins, acute at apex. Panicles of simple or branched racemes, 3–12 cm long. Spikelets paired or rarely solitary, ellipsoid, 0.42–0.45 cm long, hispid with appressed hairs, distinctly awned. Grains ellipsoid-oblong, c 0.2 cm long.

*Fls. & Frts.* : August–February.

*Distrib.* : Introduced. Rare, along the banks of flowing water courses. Nanded.

**E. procera** (Retz.) C. E. Hubb. in Kew Bull. 1930: 256. 1930; Bor. Grass. Ind. 312. 1960. *Agrostis procera* Retz. Obs. Bot. 4: 19. 1786. *Eriochloa polystachya* Hook. f. Fl. Brit. India 7: 20. 1896 non H. B. & K. 1816; Cooke, Fl. Pres. Bombay 3: 461. 1958 (Repr. ed.). *E. ramosa* O. Ktze. Rev. Gen. Pl. 2: 775. 1891; Blatt. & McC. Bombay Grass. 131. 1935.

Perennials, 60–150 cm high, densely tufted; rootstock short, creeping. Leaves 7–25 x 0.4–0.8 cm, linear, acute; ligule a wavy rim of short hairs. Panicles on short peduncles. Spikelets 0.3–0.4 cm long, shortly pedicellate, usually 2-nate, elliptic-lanceolate, acuminate. Grains ellipsoid-oblong.

Fls. & Frts. : October–January.

Illus. : Blatt. & McC. *op.cit.* t. 84; Patunkar, Grass. Marathw. 150, f. 44. 1980; Matthew. Illus. Fl. Tamilnadu Carnatic 2: tt. 868 & 869. 1982.

Distrib. : Aurangabad; Beed; Bombay; (Cooke, *op.cit.*); Chandrapur; Dhule; Kolhapur; Parbhani; Sangli; Satara; Thane; Yavatmal.

#### EUCLASTA Franch.

**Euclasta clarkei** (Hack.) T. A. Cope in Kew Bull. 35: 704. 1980. *Andropogon clarkei* Hack. in Oester. Bot. Zeit. 41: 49. 1891; Hook. f. Fl. Brit. India 7: 197. 1896. *Indochloa clarkei* (Hack.) Bor in Kew Bull. 1954: 76. 1954 & Grass. Ind. 171, f. 8. 1960.

Annuals; stems 30–45 cm high, leafy; nodes bearded. Leaves 5–10 cm long, linear or lanceolate, finely acuminate, base contracted; sheaths long, slightly tumid; ligule of hairs. Spikes 1.7–2.5 cm long; solitary on capillary peduncles from spathiform sheaths. Spikelets 6–8 pairs; sessile spikelets c 0.5 cm long, dark brown.

Fls. & Frts. : October.

Illus. : Bor, *op.cit.*

Distrib. : Pune; Satara.

#### EULALIA Kunth

- |   |     |                      |
|---|-----|----------------------|
| 1. Upper glume of sessile spikelet with an arista   | ... | <i>E. staintonii</i> |
| 1. Upper glume of sessile spikelet without an arista :  |     |                      |
| 2. Panicle of verticillate racemes on a short, laxly villous rhachis, up to 30 cm long; upper lemma 2-toothed | ... | <i>E. fastigiata</i> |

2. Panicles of digitate or fascicled racemes;  
upper lemma deeply bifid :

3. Annuals

... *E. fimbriata*

3. Perennials

... *E. trispicata*

***Eulalia fastigiata*** (Nees ex Steud.) Haines, Bot. Bih. Or. 1014. 1924 [3: 1061. 1961 (Repr. ed.)]; Bor, Grass. Ind. 155. 1960. *Saccharum fastigiatum* Nees ex Steud. Syn. Pl. Glum. 1: 409. 1855. *Erianthus fastigiatus* Nees ex Steud. *op.cit.*; Hook. f. Fl. Brit. India 7: 125. 1896.

Tufted grass. Lower leaves large, ending in a long filiform tip, margins serrulate. Panicles shining red, erect, inclined or slightly nodding, 15–30 cm long. Spikelets dense. Grains oblong.

*Fls. & Frts.* : November–December.

*Distrib.* : Bombay; Nagpur.

***E. fimbriata*** (Hack.) O. Ktze. Rev. Gen. Pl. 2: 275. 1891; Blatt. & McC. Bombay Grass. 53. 1935; Bor, Grass. Ind. 155. 1960. *Pollinia fimbriata* Hack. in DC. Mon. Phan. 6: 164. 1889; Stapf in Hook. f. Fl. Brit. India 7: 112. 1896; Cooke, Fl. Pres. Bombay 3: 468. 1958 (Repr. ed.).

Annuals, 15–40 cm tall, tufted. Leaves 4–8 x 0.15–0.25 cm, linear, pubescent above, white hairy beneath. Racemes 2–3, 3–6 cm long, white hairy, subdigitate. Spikelets 0.2–0.3 cm long, awned; sessile spikelets. 0.25–0.3 cm long, lower glumes 0.2–0.3 cm long, elliptic-oblong, 2-keeled, hairy; margins incurved, upper glume 0.3 cm long, elliptic, keeled, hairy along margins; lower lemmas narrowly oblong, hyaline, upper lemmas 2-lobed; pedicelled spikelets 0.2–0.25 cm long.

*Fls. & Frts.* : October–February.

*Illus.* : Blatt. & McC. *op.cit.* t. 36.

*Distrib.* : Ahmednagar; Bombay; Kolhapur; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

***E. staintonii*** Bor in Kew Bull. 1957 : 411. 1958 & Grass. Ind. 157. 1960.

Herbs, perennial; culms 30–80 cm tall, leafy. Sheaths 6–9 cm long, basal ones covered with wool, the upper ones glabrous, bearded at mouth; ligule membranous. Leaves 25–60 x 0.2–0.35 cm, over topping the culms, acuminate at apex. Racemes 2–4-fascicled, 1.5–2.5 cm long, silky with white appressed hairs. Sessile spikelets oblong-lanceolate, 0.3–0.4 cm long, hairy, awned; pedicelled spikelets similar to sessile ones.

*Fls. & Frts.* : October–December.

*Distrib.* : Rare, along banks of river in dense forest. Nanded.

*E. trispicata* (Schult.) Henr. in *Blumea* 3: 453. 1940; Bor, Grass. Ind. 157. 1960. *Andropogon trispicatus* Schult. Syst. Veg. 2, Mant. 452. 1824. *Eulalia argentea* Brongn. in Duperr. Voy. Conquille Bot. 2(2): 92. 1830; Blatt. & McC. Bombay Grass. 52. 1935. *Pollinia argentea* Trin. in Bull. Acad. Sci. Petersb. 1: 71. 1836; Hook. f. Fl. Brit. India 7: 111. 1896; Cooke, Fl. Pres. Bombay 3: 467. 1958 (Repr. ed.).

Perennials, stout; culms 60–150 cm tall, tufted, erect or geniculate. Leaves 10–25 cm long, linear, flaccid; sheaths long, bearded at sides; ligules short, membranous, tinged with long hairs. Racemes 6–12, 4–6 cm long. Spikelets 0.3–0.4 cm long, elliptic-oblong, densely clothed with white hairs.

*Fls. & Frts.* : October–December.

*Illus.* : Blatt. & McC. *op.cit.* t. 35; Patunkar, Grass. Marathw. 61, f. 17. 1980; Matthew, *Illus. Fl. Tamilnadu Carnatic* 2: tt. 870 & 871. 1982.

*Distrib.* : Amaravati; Bombay (Blatt. & McC. *op.cit.*); Chandrapur, Kolhapur; Nagpur; Nasik; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

#### EULALIOPSIS Honda

*Eulaliopsis binata* (Retz.) C. E. Hubb. in Hook. Ic. Pl. subt. 3262. 1935; Bor, Grass. Ind. 158. 1960. *Andropogon binatus* Retz. Obs. Bot. 5: 21. 1789. *Ischaemum angustifolium* (Trin.) Hack. in DC. Monogr. Phan. 6: 241. 1889; Hook. f. Fl. Brit. India 7: 129. 1896; Cooke, Fl. Pres. Bombay 3: 478. 1958 (Repr. ed.). *Pollinidium binatum* (Retz.) C. E. Hubb. in Kew Bull. 1932: 72. 1932; Blatt. & McC. Bombay Grass. 24. 1935. 'Bhabar', 'Sabai'.

Perennials; culms 60–90 cm high, tufted, woolly at base. Leaves 30–60 x 0.25–0.43 cm, concave or convolute, tapering into a subpungent acumen, base obtuse. Racemes 2–4 on axillary and terminal peduncles, 2.5–5.0 cm long. Sessile spikelets 0.43 cm long, lanceolate; pedicelled spikelets similar.

*Fls. & Frts.* : December–February.

*Illus.* : Blatt. & McC. *op.cit.* t. 16.

*Distrib.* : Bombay (Blatt. & McC. *op.cit.*); Pune; Thane.

1. Awn of lemma 2 cm
1. Awn of lemma much

*Garnotia ar*  
1908 [ 3: 534. 195  
1935; Bor, Grass. I  
Prakash & Jain in

Herbs, annu  
2.5–5.0 x 0.1–0.3  
lacerate. Inflores  
long. Spikelets 0.

*Fls. & Frts.*

*Illus.* : Bla  
Hassan Dt. 702,

*Distrib.* : A  
Satara; Sindhu

*G. tenell*  
Gould in Kew  
3: 13. 1979. B  
Inst. 3, 4: 34.  
1896; Cooke,  
non Brongn. I

Annual  
decumbent.  
membranous  
distant fasci

*Fls. &*

*Illus.* :  
figs. 6–13;  
1982.

*Distr*  
Raigad; Ra

1. Joints

1. Awn of lemma 2 cm long or more
1. Awn of lemma much shorter, 0.5–1.2 cm long

... *G. arborum*

... *G. tenella*

**Garnotia arborum** Stapf ex T. Cooke, Fl. Pres. Bombay 2: 1013. 1908 [ 3: 534. 1958 (Repr. ed.) ]; Blatt. & McC. Bombay Grass. 206. 1935; Bor, Grass. Ind. 567. 1960; Gould in Kew Bull. 27: 536. 1972; Ved Prakash & Jain in Fasc. Fl. India 3: 6. 1979.

Herbs, annual, 5–20 cm high; culms weak, nodes hispid. Leaves 2.5–5.0 x 0.1–0.3 cm, linear, acuminate; ligules narrow, membranous, lacerate. Inflorescence paniculate, branches few, fascicled, up to 2 cm long. Spikelets 0.2–0.3 cm long.

*Fls. & Frts.* : September–December.

*Illus.* : Blatt. & McC. *op.cit.* t. 135; Ramam. in Sald. & Nicols. Fl. Hassan Dt. 702, f. 111 B. 1976.

*Distrib.* : Ahmednagar; Kolhapur; Nasik; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane (Blatt. & McC. *op.cit.*).

**G. tenella** (Arn. ex Miq.) Jan. in Feddes Repert. 17: 86. 1921; Gould in Kew Bull. 27: 528. 1972; Ved Prakash & Jain in Fasc. Fl. India 3: 13. 1979. *Berghausia tenella* Arn. ex Miq. in Verh. Konink. Nederl. Inst. 3, 4: 34. 1851. *Garnotia stricta sensu* Hook. f. Fl. Brit. India 7: 243. 1896; Cooke, Fl. Pres. Bombay 534. 1935; Bor, Grass. Ind. 569. 1960 non Brongn. 1831.

Annuals, 17–30 cm high, tufted; culms curving, erect or decumbent. Leaves 3–4 x 0.2–0.3 cm, linear; ligules narrow, membranous. Panicles 5–10 cm long, narrowly contracted; branches in distant fascicles. Spikelets 0.2–0.5 cm long, scabrid.

*Fls. & Frts.* : August–September.

*Illus.* : Blatt. & McC. *op.cit.* t. 136; Ved Prakash & Jain, *op.cit.* 14, figs. 6–13; Matthew, *Illus. Fl. Tamilnadu Carnatic* 2: tt. 872 & 873. 1982.

*Distrib.* : Ahmednagar; Bombay; Dhule; Kolhapur; Nasik; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Sholapur.

GLYPHOCHLOA W. D. Clayton

1. Joints and pedicels 0.4–0.5 cm long

... *G. goensis*

1. Joints and pedicels 0.2–0.35 cm long :
  2. Joints and pedicels glabrous :
    3. Joints and pedicels 0.15–0.2 cm long
    3. Joint and pedicels 0.2–0.35 cm long : ... *G. talbotii*
    4. Joints and pedicels unequal ... *G. mysorensis*
    4. Joints and pedicels equal : ... *G. acuminata*
    5. Glumes with 1 well-developed awn (rarely bifid at top) or awn reduced to a mucro ... *G. divergens*
    5. Glumes with 2 divergent awns
  2. Joints and pedicels hairy or hirsute or with a tuft of hairs at tip:
    6. Joints and pedicels forming a long high-heeled boot-like structure ... *G. santapauli*
    6. Joints and pedicels not as above : ... *G. ratnagiriensis*
    7. Anthers c 0.2 cm long ... *G. forficulata*
    7. Anthers less than 0.2 cm long

**Glyphochloa acuminata** (Hack.) W. D. Clayton in Kew Bull. 35: 815. 1981. *Rottboellia acuminata* Hack. in DC. Monogr. Phan. 6: 291. 1889; Hook. f. Fl. Brit. India 7: 155. 1896; Cooke, Fl. Pres. Bombay 3: 471. 1958 (Repr. ed.). *Manisuris acuminata* (Hack.) O. Ktze. Rev. Gen. Pl. 2: 779. 1891; Bor, Grass. Ind. 191. 1960; Jain in Bull. Bot. Surv. India 12: 9. (1970) 1972. *Peltophorus acuminatus* (Hack.) A. Camus in Bull. Mus. Hist. Nat. Paris 27: 371. 1921; Blatt. & McC. Bombay Grass. 34. 1935.

1. Pedicelled spikelet 0.45–0.5 cm long ... var. *stocksii*
1. Pedicelled spikelet 0.3–0.4 cm long :
  2. Sessile spikelet inclusive of awn, 0.8–1.0 cm long; lower glume awned ... var. *acuminata*
  2. Sessile spikelet inclusive of awn, up to 0.5 cm long; lower glume shortly awned or awnless ... var. *woodrowii*

var. **acuminata.**

Annuals, 10–30 cm tall, erect, tufted; nodes bearded. Leaves 2–4 x 0.2–0.25 cm, linear. Racemes solitary, 3–5 cm long; peduncles hairy. Sessile spikelets: lower glume elliptic, 0.25–0.3 cm long, with 3–5 horizontal ridges, furrowed in between ridges, with a wing and narrowed into awn; upper glume c 0.25 cm long, elliptic, hyaline, 1-nerved; pedicelled spikelet c 0.3 cm long, lower glume oblong-ovate, smooth, winged on one side.

Fls. & Frts.

Illus. : Blatt

Distrib. : Ra

var. **stocks**

*Rottboellia acum*

1896. *Manisuris*

Surv. India 12: 9

Annuals,

Leaves 5–10 cm

Sessile spikelet

ovate, winged o

Fls. & Frt.

Illus. : Jai

Distrib. : I

var. **woo**

*Manisuris acu*

Bull. Bot. Surv

Annuals,

linear. Racem

spikelets with

Fls. & F

Illus. : J

Distrib.

**G. dive**

Salunkhe &

*Rottboellia*

*Manisuris d*

Grass. Ind. 7

1. Joints and

glabrous o

1. Joints and

densely w

var. **di**

Annua

with tuber

*Fls. & Frts.* : August–February.

*Illus.* : Blatt. & McC. *op.cit.* t. 24; Jain, *op.cit.* 1, f. 8.

*Distrib.* : Rare. Ratnagiri; Sindhudurg.

var. *stocksii* (Hook. f.) W. D. Clayton in Kew Bull. 35: 815. 1981.  
*Rottboellia acuminata* Hack. var. *stocksii* Hook. f. Fl. Brit. India 7: 155.  
 1896. *Manisuris acuminata* var. *stocksii* (Hook. f.) Jain in Bull. Bot.  
 Surv. India 12: 9. (1970) 1972.

Annuals, 15–35 cm tall, branched from base, nodes glabrous.  
 Leaves 5–10 cm long, linear. Racemes 4–6 cm long; peduncles hairy.  
 Sessile spikelet: lower glumes with 3–4 transverse ridges; pedicelled  
 ovate, winged on one side and awned.

*Fls. & Frts.* : September–October.

*Illus.* : Jain, *op.cit.* 11, f. 12.

*Distrib.* : Rare. Ratnagiri; Sindhudurg.

var. *woodrowii* (Bor) W. D. Clayton in Kew Bull. 35: 815. 1981.  
*Manisuris acuminata* var. *woodrowii* Bor, Grass. Ind. 191. 1960; Jain in  
 Bull. Bot. Surv. India 12: 10. (1970) 1972.

Annuals, tufted, 25–40 cm tall; nodes hairy. Leaves 8–15 cm long,  
 linear. Racemes 5–7 cm long; peduncles hairy. Lower glumes of sessile  
 spikelets with 5–6 transverse ridges, winged at tip, without awn.

*Fls. & Frts.* : October–November.

*Illus.* : Jain, *op.cit.* 11, f. 4.

*Distrib.* : Rare. Ratnagiri; Sindhudurg.

*G. divergens* (Hack.) W.D. Clayton in Kew Bull. 35: 815. 1981;  
 Salunkhe & Yadav in Indian Bot. Repr. 8: 143, figs. 1–13. (1989) 1990.  
*Rottboellia divergens* Hack. in DC Monogr. Phan. 6: 292. 1889.  
*Manisuris divergens* (Hack.) O. Ktze. Rev. Gen. Pl. 2: 799. 1891; Bor  
 Grass. Ind. 701. 1960; Jain in Bull. Bot. Surv. India 12: 10. (1970) 1972.

- |  |     |                       |
|--|-----|-----------------------|
| 1. Joints and pedicels 0.15 cm long; glumes c 0.25 cm long,<br>glabrous or puberulous    | ... | var. <i>divergens</i> |
| 1. Joints and pedicels c 0.25 cm long; glumes 0.4–0.45 cm long,<br>densely white hirsute | ... | var. <i>hirsuta</i>   |

var. *divergens*.

Annuals, 6–10 cm high. Leaves 3–7 x 0.25–0.35 cm, linear, covered  
 with tubercled hairs. Racemes 1.5–2.5 cm long, densely flowered.

Sessile spikelets 0.25–0.35 cm long; pedicelled spikelets c 0.35 cm long, lanceolate.

*Illus.* : Salunkhe & Yadav, *op.cit.*

*Distrib.* : Rare. Kolhapur (Salunkhe & Yadav, *op.cit.*); Sindhudurg.

var. *hirsuta* (C. E. C. Fischer) W. D. Clayton in Kew Bull. 35: 815. 1981. *Manisuris forficulata* var. *hirsuta* C. E. C. Fischer in Kew Bull. 1933: 357. 1933; Bor, Grass. Ind. 192. 1960; Bole & Almeida in J. Bombay nat. Hist. Soc. 84: 386. 1987. *M. divergens* var. *hirsuta* (C. E. C. Fischer) Jain in Bull. Bot. Surv. India 12: 12. (1970) 1972.

Nodes, pedicels, lower glumes densely hirsute. Lower glume of sessile spikelets spinulate, more or less tomentose, shortly aristate; upper glume of pedicelled spikelet cuspidate.

*Illus.* : Jain *op.cit.* 11, f. 7.

*Distrib.* : Satara (Bole & Almeida, *op.cit.*).

*G. forficulata* (C. E. C. Fischer) W. D. Clayton in Kew Bull. 35: 815. 1981. *Manisuris forficulata* C. E. C. Fischer in Kew Bull. 1933: 353. 1933 *emend* Jain in Bull. Bot. Surv. India 12: 12. (1970) 1972; Bor, Grass. Ind. 192. 1960. *Rottboellia divergens* Hook. f. Fl. Brit. India 7: 155. 1896 *non* Hack. 1889; Cooke, Fl. Pres. Bombay 3: 470. 1958 (Repr. ed.). *Peltophorus divergens* Blatt. & McC. Bombay Grass. 34. 1935. 'Marel'.

Herbs, annual, 10 cm high, erect or ascending. Leaves 7–8 x 0.1–0.2 cm, narrowly linear, hairy; sheaths hairy; ligules membranous, rounded. Racemes 1.5–2.5 cm long, terminal, simple, solitary. Sessile spikelets 0.4–0.6 cm long including wings; pedicelled spikelets longer and narrower than sessile. Grains ellipsoid, brown.

*Fls. & Frts.* : September–November.

*Illus.* : Jain, *op.cit.* 11, f. 6.

*Distrib.* : Ahmednagar; Bombay; Kolhapur; Nasik; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

*G. goaensis* (Rolla Rao & Hemadri) W. D. Clayton in Kew Bull. 35: 815. 1981. *Manisuris goaensis* Rolla Rao & Hemadri in Bull. Bot. Surv. India 10: 106. (1968) 1969; Jain in Bull. Bot. Surv. India 12: 14. (1970) 1972.

Annuals, 20–35 cm tall; nodes hairy. Leaves 5–10 x 0.25–0.35 cm, linear. Racemes 3–6 cm long; peduncles glabrous. Lower glumes of sessile spikelets c 2.6 cm long, including awn, ovate, 2–3 transversely

ridged, broadly winged spikelets c 1.1 cm long, broadly winged on one

*Fls. & Frts.* : Oct

*Illus.* : Rolla Rao

*Distrib.* : Rare. 1

*G. mysorensis*

815. 1981. *Manisuris* India 10: 280. (1968)

Annuals, tufted ascending, softly on lower 6–10 x 0.2– solitary, erect, 1.0– spikelets 0.35–0.5 c 0.15 cm long, elliptic

*Fls. & Frts.* :

*Illus.* : Jain &

*Distrib.* : Ra

*G. ratnagiri*

35: 815. 1981. *M. Forester* 100: 250

Annuals, tufted bearded. Leaves bulbous-based, compressed, 0.5 marginal tubercles or oblong-lanceolate lower glumes of keel winged.

*Fls. & Frts.*

*Illus.* : K. Dt. 535, figs. 1

*Distrib.* :

*G. santa*

815. 1981. *M.*

ridged, broadly winged in upper 3/4, narrowed into awn; pedicelled spikelets c 1.1 cm long, including awn; lower glumes oblong-elliptic, broadly winged on one side.

*Fls. & Frts.* : October–November.

*Illus.* : Rolla Rao & Hemadri *op.cit.*; Jain, *op.cit.* 11, f. 10.

*Distrib.* : Rare. Ratnagiri (Salunkhe, 1995); Sindhudurg.

**G. mysorensis** (Jain & Hemadri) W. D. Clayton in Kew Bull. 35: 815. 1981. *Manisuris mysorensis* Jain & Hemadri in Bull. Bot. Surv. India 10: 280. (1968) 1969.

Annuals, tufted, c 20 cm high; roots fibrous; culms erect or slightly ascending, softly or densely villous. Leaves linear, acute, flat, villous: lower 6–10 x 0.2–0.3 cm; upper shorter, faintly 5-nerved. Racemes solitary, erect, 1.0–3.5 x 4.5 cm, compressed. Spikelets paired: sessile spikelets 0.35–0.5 cm long; pedicelled spikelet 0.35–0.4 cm long. Grains c 0.15 cm long, elliptic-oblong, compressed.

*Fls. & Frts.* : September–October.

*Illus.* : Jain & Hemadri, *op.cit.* 281, figs. a–c.

*Distrib.* : Rare. Ratnagiri (Salunkhe, 1995); Sindhudurg.

**G. ratnagirica** (Kulkarni & Hemadri) W. D. Clayton in Kew Bull. 35: 815. 1981. *Manisuris ratnagirica* Kulkarni & Hemadri in Indian Forester 100: 250. 1974.

Annuals, tufted; culms 15–35 cm tall, erect, branched, nodes bearded. Leaves 3–10 x 0.2–0.5 cm, linear, sparsely clothed with bulbous-based hairs. Racemes 3–6 cm long. Sessile spikelets dorsally compressed, 0.5–0.6 cm long; lower glumes oblong, 2-awned, with 3–8 marginal tubercles upper half smooth; upper glumes ovate-lanceolate or oblong-lanceolate, boat-shaped; pedicelled spikelets 0.9–1.3 cm long; lower glumes oblong-lanceolate, 1-awned, upper glumes boat-shaped, keel winged.

*Fls. & Frts.* : September–October.

*Illus.* : Kulkarni & Hemadri, *op.cit.* 252; Kulkarni, Fl. Sindhudurg Dt. 535, figs. 1–6. 1987.

*Distrib.* : Rare. Sindhudurg.

**G. santapau** (Jain & Deshpande) W. D. Clayton in Kew Bull. 35: 815. 1981. *Manisuris santapau* Jain & Deshpande in Bull. Bot. Surv.

India 10: 277. (1968) 1969; Jain in Bull. Bot. Surv. India 12: 15. (1970) 1972.

Annuals, tufted, 10–15 cm tall. Leaves 3–5 x 0.15–0.2 cm, linear. Racemes 2–3 cm long; peduncles glabrous. Sessile spikelets: lower glumes 0.3–0.4 cm long excluding awn. oblong-ovate, hairy in lower half, winged on either side at tip, awn 0.4–0.45 cm long; pedicelled spikelets 0.5 cm long (including awn); lower glumes oblong-elliptic, glabrous, obliquely winged, broad at tip; upper glumes boat-shaped.

*Fls. & Frts.* : August–February.

*Illus.* : Jain & Deshpande, *op.cit.* 278; Jain, *op.cit.* 11, f. 11.

*Distrib.* : Rare on exposed, marshy, lateritic hill-tops; in open situations along coastal areas. Ratnagiri; Sindhudurg.

*Notes* : Apparently endemic to Western Chats of the above districts, Maharashtra State.

*G. talbotii* (Hook. f.) W. D. Clayton in Kew Bull. 35: 816. 1981. *Rottboellia talbotii* Hook. f. Fl. Brit. India 7: 155. 1896; Cooke, Fl. Pres. Bombay 3: 471. 1958 (Repr. ed.). *Manisuris talbotii* (Hook. f.) Bor, Grass. Ind. 192. 1960; Jain in Bull. Bot. Surv. India 12: 16. (1970) 1972; S.M. Almeida, Fl. Savantwadi 2: 149. 1990. *Peltophorus talbotii* (Hook. f.) A. Camus in Bull. Mus. Hist. Nat. Paris 27: 371. 1921; Blatt. & McC. Bombay Grass. 35. 1935.

Annuals, 15–30 cm tall. Leaves 3–8 cm long. Lower glume of sessile spikelets with 2–3 transverse ridges; pedicelled spikelets equal to sessile, lower glume winged along one margin, long-awned, upper glume keeled, keel winged above.

*Fls. & Frts.* : September–October.

*Distrib.* : Rare in waste lands. Sindhudurg (S.M. Almeida, *op.cit.*).

#### HEMARTHRIA R. Br.

*Hemarthria compressa* (L. f.) R. Br. Prodr. 207. 1810; Blatt. & McC. Bombay Grass. 31. 1935; Bor, Grass. Ind. 161. 1960. *Rottboellia compressa* L. f. Suppl. 114. 1781; Hook. f. Fl. Brit. India 7: 153. 1896; Cooke, Fl. Pres. Bombay 3: 470. 1958 (Repr. ed.). 'Baika'.

Perennials, 60–150 cm high; culms decumbent, rooting at nodes. Leaves 3–12 x 0.3–0.5 cm, linear, acute; ligule a narrow fimbriate membrane. Racemes solitary or 2–5 from a leaf sheath, 5–13 cm long, narrow. Sessile spikelets 0.3–0.4 cm long; pedicelled longer and narrower than sessile.

FLC

*Fls. & Frts.* : November

*Illus.* : Blatt. & McC. 19. 1980.

*Distrib.* : Akola; Amnargpur; Nagpur; Nanded; Osman

#### 1. Annuals :

2. Dwarf species, sessile glabrous; peduncles
2. Tall species; glumes stiff hairs from the racemes villous

#### 1. Perennials :

3. Giant grasses; sessile fertile spikelets
3. Not giant grasses; lower glume of

#### Heteropogon

836. 1817; Blatt. & McC. 163. 1960. *Andropogon* India 7: 199. 1896. 'Kali Kusali', 'Kur

Herbs, perennials below. Leaves 5 compressed. Racemes dark brown; pedicelled lemmas.

*Fls. & Frts.*

*Illus.* : Blatt.

*Illus.* Fl. Delhi : Matthew, *Illus.* Ugemuge, Fl. N

*Distrib.* : C

*H. polys*

Blatt. & McC.

*Fls. & Frts.* : November–December.

*Illus.* : Blatt. & McC. *op.cit.* t. 21; Patunkar, Grass. Marathw. 65, f. 19. 1980.

*Distrib.* : Akola; Aurangabad; Beed; Jalgaon (Blatt. & McC. *op.cit.*); Nagpur; Nanded; Osmanabad; Parbhani; Pune; Yavatmal.

# HETEROPOGON Pers.

## 1. Annuals :

2. Dwarf species, slender; glumes of pedicelled spikelet glabrous; peduncle of racemes smooth and glabrous ... *H. polystachyos*

2. Tall species; glumes of pedicelled spikelets armed with stiff hairs from tubercle-based bristles; peduncles of racemes villous or puberulous ... *H. ritchiei*

## 1. Perennials :

3. Giant grasses; racemes 10–15 cm long; lower glume of sessile fertile spikelet 0.8–0.9 cm long ... *H. triticeus*

3. Not giant grasses; racemes not more than 6 cm long; lower glume of fertile spikelet 0.6–0.65 cm long ... *H. contortus*

**Heteropogon contortus** (L.) P. Beauv. ex R. & S. Syst. Veg. 2: 836. 1817; Blatt. & McC. Bombay Grass. 109. 1935; Bor, Grass. Ind. 163. 1960. *Andropogon contortus* L. Sp. Pl. 1045. 1753; Hook. f. Fl. Brit. India 7: 199. 1896; Cooke, Fl. Pres. Bombay 3: 510. 1958 (Repr. ed.). 'Kali Kusali', 'Kursali', 'Nanisunkhali', 'Pandhri Sukal'.

Herbs, perennial, densely tufted; culms 10–90 cm tall, decumbent below. Leaves 5–14 x 0.2–0.3 cm, linear, acuminate, flat; sheaths compressed. Racemes 3–5 cm long. Sessile spikelets 0.4–0.6 cm long, dark brown; pedicelled spikelets c 0.5 cm long. Grains enclosed by lemmas.

*Fls. & Frts.* : August–February.

*Illus.* : Blatt. & McC. *op.cit.* t. 71; Bor, *op.cit.* 164, f. 6; Mahesh. *Illus.* Fl. Delhi f. 234. 1966; Patunkar, Grass. Marathw. 67, f. 20. 1980; Matthew, *Illus.* Fl. Tamilnadu Carnatic 2: tt. 876 & 877. 1982; Ugemuge, Fl. Nagpur Dt. t. 188. 1986.

*Distrib.* : Common throughout in open grasslands.

**H. polystachyos** (Roxb.) Schult. Syst. Veg. 2, Mant. 460. 1824; Blatt. & McC. Bombay Grass. 109. 1935; Bor, Grass. Ind. 165. 1960.

*Andropogon polystachyos* Roxb. Fl. Ind. 1: 265. 1820; Hook. f. Fl. Brit. India 7: 202. 1896; Cooke, Fl. Pres. Bombay 3: 508. 1958 (Repr. ed.).

Herbs. Leaves 5–10 cm long; lower flat, upper convolute, hairy. Racemes 1.3–2.5 cm long; peduncles slender, 5–10 cm long. Sessile spikelets c 0.5 cm long, dark brown; callus bearded on one side; lower glume oblong, obtuse, pubescent on back; upper glume linear-oblong, coriaceous, margins broad, hyaline; lower lemma oblong, ciliate, awns c 5 cm long, hairy; pedicelled spikelets c 0.6 cm long; lower glume winged on margins; upper glume lanceolate, ciliate.

Fls. & Frts. : July–November.

Distrib. : Rare. Dhule; Pune & Satara (Cooke, *op.cit.*).

**H. ritchiei** (Hook. f.) Blatt. & McC. in J. Bombay nat. Hist. Soc. 32: 623. 1928 & Bombay Grass. 108. 1935; Bor, Grass. Ind. 165. 1960. *Andropogon ritchiei* Hook. f. Fl. Brit. India 7: 201. 1896; Cooke, Fl. Pres. Bombay 3: 509. 1958 (Repr. ed.).

Herbs, 75 cm high or more, stout, erect, rigid. Leaves up to 18.0 x 0.6 cm, linear, shortly bulbous hairy on either side. Racemes 2.5–5.0 cm long, hispid. Sessile spikelets more than 0.6 cm long; pedicelled spikelets c 1.2 cm long.

Fls. & Frts. : September–December.

Illus. : Blatt. & McC. *op.cit.* t. 70.

Distrib. : Amaravati; Chandrapur; Nasik; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

**H. triticeus** (R.Br.) Stapf ex Craib in Kew Bull. 1912: 432. 1912; Bor, Grass. Ind. 165. 1960. *Andropogon triticeus* R. Br. Prodr. 201. 1810; Hook. f. Fl. Brit. India 7: 200. 1896; Cooke, Fl. Pres. Bombay 3: 509. 1958 (Repr. ed.). *Heteropogon insignis* Thw. Enum. Pl. Zeyl. 437. 1864; Blatt. & McC. Bombay Grass. 108. 1935. 'Bhale Kusal', 'Patang'.

Herbs, perennial, stout; culms 150–250 cm tall. Leaves 5–20 x 0.3–0.5 cm, narrowly linear, sparsely hairy; sheaths compressed; ligule a rounded, scarcely ciliolate membrane. Racemes 10–15 cm long. Sessile spikelets c 1.2 cm long; pedicelled spikelets up to 2.5 cm long.

Fls. & Frts. : September–November.

Illus. : Blatt. & McC. *op.cit.* t. 69.

Distrib. : Ahmednagar; Akola; Aurangabad; Beed; Buldhana; Chandrapur; Kolhapur; Nanded; Nasik; Osmanabad; Parbhani; Pune; Raigad; Ratnagiri; Satara; Thane.

**Hygroryza**  
Phil. J. 15: 38.  
Pres. Bombay :  
1935; Bor, Gra  
1789.

Herbs, fl  
ovate-oblong,  
long; lemmas  
Grains oblong

Fls. & Fr

Illus. : 1  
Aquat. Ang. 1

Distrib.

Notes : C  
only and Gar  
Kothari & M  
reported it fo

**Imperata**  
Blatt. & McC  
Cope in Nas  
Syst. Nat. ec  
: 26. t. 11. 1  
Bombay 3: :  
Hubb. ex C  
170. 'Dub'.

Herbs,  
5–12 x 0.1  
5–10 cm lo  
lanceolate,  
0.1–0.13 cm

Fls. &

Illus.  
21. 1980; M

Distrib

*Hygroryza aristata* (Retz.) Nees ex Wight & Arn. in Edinb. New Phil. J. 15: 380. 1833; Hook. f. Fl. Brit. India 7: 95. 1896; Cooke, Fl. Pres. Bombay 3: 563. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 27. 1935; Bor, Grass. Ind. 597. 1960. *Pharus aristatus* Retz. Obs. Bot. 5: 23. 1789.

Herbs, floating; culms spongy, rooting at nodes. Leaves linear or ovate-oblong, glaucous beneath. Panicles 3-5 cm long. Spikelets 1-2 cm long; lemmas c 0.8 cm long, lanceolate, 5-nerved, hairy on nerves. Grains oblong.

Fls. & Frts. : November-March.

Illus. : Blatt. & McC. *op.cit.* t. 184; Bor, *op.cit.* 598, f. 67; Subr. Aquat. Ang. 175, f. 63. 1962; Ugemuge, Fl. Nagpur Dt. t. 189. 1986.

Distrib. : Chandrapur; Kolhapur; Nagpur; Pune; Raigad, Thane.

Notes : Cooke (*op.cit.*) has recorded this plant from Chikli (Gujarat) only and Gamble (1915-36) records from both the coasts down South. Kothari & Moorthy (*J. Bombay nat. Hist. Soc.* 80: 260. 1983) have reported it for the first time from Maharashtra.

IMPERATA Cyr.

*Imperata cylindrica* (L.) Raeuschel. Nom. Bot. ed. 3: 10. 1797; Blatt. & McC. Bombay Grass. 42. 1935; Bor, Grass. Ind. 169. 1960; T. A. Cope in Nasir & Ali, Fl. Pak. 143: 252. 1982. *Lagurus cylindricus* L. Syst. Nat. ed. 10. 878. 1759. *Imperata arundinacea* Cyr. Pl. Rar. Neap. 2: 26. t. 11. 1792; Hook. f. Fl. Brit. India 7: 106. 1896; Cooke, Fl. Pres. Bombay 3: 464. 1958 (Repr. ed.). *I. cylindrica* var. *major* (Nees) N. E. Hubb. ex C. E. Hubb. & Vaughan, Grass. Maur. 96. 1940; Bor, *op.cit.* 170. 'Dub'.

Herbs, perennial; culms 10-50 cm tall, erect, rhizomatous. Leaves 5-12 x 0.15-0.3 cm, linear-lanceolate. Panicles spiciform, cylindric, 5-10 cm long. Spikelets c 0.3 cm long, linear-lanceolate; lower glume lanceolate, hairy; upper glume keeled; lower lemma oblong. Grains 0.1-0.13 cm long, oblong.

Fls. & Frts. : August-November.

Illus. : Blatt. & McC. *op.cit.* t. 39; Patunkar, Grass. Marathw. 70, f. 21. 1980; Matthew, Illus. Fl. Tamilnadu Carnatic 2: tt. 880 & 881. 1982.

Distrib. : Aurangabad; Bombay; Chandrapur; Kolhapur; Nagpur;

Nanded; Osmanabad; Parbhani; Pune; Raigad; Satara; Thane (Blatt. & McC. *op.cit.*); Yavatmal.

## INDOPOA Bor

*Indopoa paupercula* (Stapf) Bor in Kew Bull. 13, 225. 1958, & Grass. Ind. 523. 1960. *Tripogon pauperculus* Stapf in Hook. Ic. Pl. 4, 2442. 1896; Hook. f. Fl. Brit. India 7 : 285. 1896; Cooke, Fl. Pres. Bombay 3: 558. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 266. 1935; Bor, Grass. Ind. 522. 1960.

Annuals, 10–15 cm tall, slender, tufted. Leaves 3–5 x 0.15–0.2 cm, linear, minutely hairy on nerves above, glabrous below. Spikes 5–9 cm long, slender, lax. Spikelets 2.5–2.7 cm long (including awn); lower glumes c 0.25 cm long, oblong, hyaline, 1-nerved, apex mucronate; upper glumes elliptic, c 0.3 cm long, hyaline, keeled, mucronate.

Fls. & Frts. : August–November.

Illus. : Blatt. & McC. *op.cit.* t. 178; Bor, Grass. Ind. 523, f. 57. 1960.

Distrib. : Ahmednagar; Bombay; Kolhapur; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

## ISACHNE R. Br.

1. Lower and upper florets dissimilar (heteromorphous) :
  2. Spikelets c 0.1 cm long ... *I. gracilis*
  2. Spikelets 0.15–0.4 cm long :
    3. Spikelets c 0.2 cm or more long :
      4. Panicles lax; leaf blades narrowly lanceolate ... *I. globosa*
      4. Panicles dense; leaf blades ovate-lanceolate ... *I. dispar*
    3. Spikelets c 0.2 cm long or less :
      5. Spikelets 0.2 cm long; anthers of lower floret 0.075–0.1 cm long ... *I. miliacea*
      5. Spikelets not more than 0.16 cm long; anthers of lower floret 0.03–0.04 cm long ... *I. pulchella*
1. Lower and upper florets almost similar in shape, size and texture :
  6. Glumes conspicuously longer than spikelet :
    7. Leaf blades linear; culms wiry, climbing, woody, 1–2 m long ... *I. angladei*
    7. Leaf blades lanceolate or ovate to ovate-lanceolate; culms not as above ... *I. lisboae*

6. Glumes shorter, equ
8. Leaf blades na
9. Leaf blad pedicels w
9. Leaf blad pedicels v
10. Plar 5–1
10. Pla 4.5
8. Leaf blades
11. Leaf bl up to 0.
11. Leaf b up to 0
12. F
12. F

*Isachne a*  
India 7: 22. 189  
Fasc. Fl. India 1

Suberect  
beneath, margi  
branched. Spik  
glumes ovate-l  
margins. Nuts

Fls. & Fr

Distrib.  
Almeida, *op.c.*

*I. angla*  
Grass. Ind. 5  
1984; Bole &

Perenni  
Panicles 5–8  
Spikelets 0.2

Fls. : N

Distrib

*I. bic*  
1–7. (1973)

- Glumes shorter, equal or slightly longer than spikelet :
6. Leaf blades narrowly to broadly lanceolate :
    9. Leaf blades glabrous; panicle branches and pedicels without glandular bands ... *I. albens*
    9. Leaf blades hirsute; panicle branches and pedicels with conspicuous glandular bands :
      10. Plants 35-95 cm tall, robust; leaf blades 5-16 x 0.5-1.7 cm; panicles 8-18 cm long ... *I. swaminathanii*
      10. Plants up to 40 cm tall; leaf blades up to 4.5 x 0.8 cm; panicles up to 7 cm long ... *I. bicolor*
  8. Leaf blades linear :
    11. Leaf blades 15-35 x 0.2-1.0 cm; culms up to 0.5 cm wide ... *I. meeboldii*
    11. Leaf blades up to 15.0 x 0.6 (-0.8) cm; culms up to 0.25 cm wide :
      12. Florets with tuft of long, copious woolly hairs ... *I. borii*
      12. Florets without tuft of hairs ... *I. elegans*

*Isachne albens* Trin. Sp. Gram. 1, Ic. t. 85. 1826; Hook. f. Fl. Brit. India 7: 22. 1896; Bor, Grass. Ind. 579. 1960; Ved Prakash & Jain in Fasc. Fl. India 14: 13. 1984; S.M. Almeida, Fl. Savantwadi 2: 133. 1990.

Suberect annuals. Leaves linear-lanceolate, sparsely hairy beneath, margins thick, hairy. Panicles terminal, hairy, 20-40 cm long, branched. Spikelets many, globose, white, deciduous, bracteate; outer glumes ovate-lanceolate, hairy along margins, inner oblong, hairy along margins. Nuts globose.

Fls. & Frts. : October-November.

Distrib. : Rare in wet soils in open fields. Sindhudurg (S.M. Almeida, *op.cit.*)

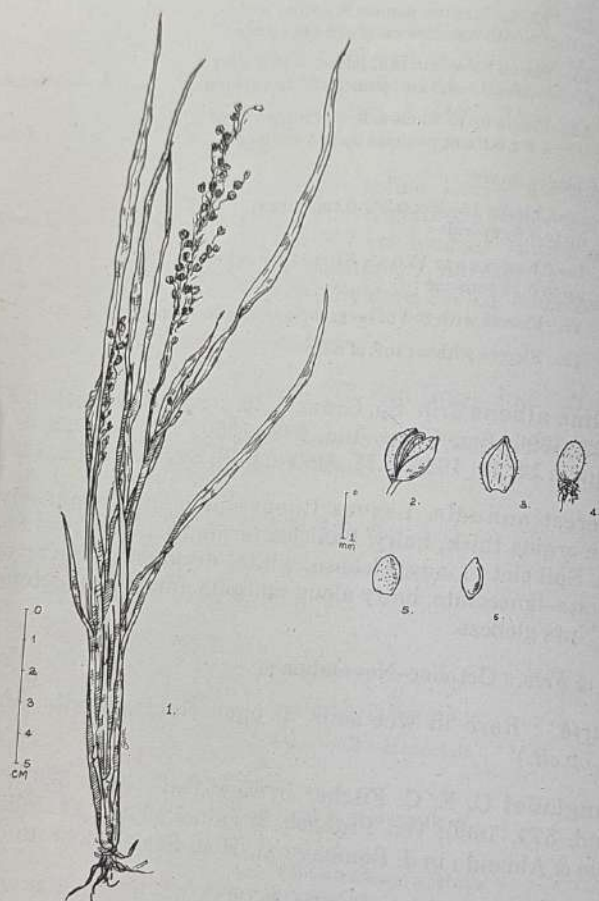
*I. angladei* C. E. C. Fischer in Kew Bull. 1932: 323. 1932; Bor, Grass. Ind. 579. 1960; Ved Prakash & Jain in Fasc. Fl. India 14: 13. 1984; Bole & Almeida in J. Bombay nat. Hist. Soc. 84: 384. 1987.

Perennials, c 2 m high. Leaves 3-12 x 0.15-0.7 cm, flat or involute. Panicles 5-8 cm long with erect, spreading, up to 4 cm long branches. Spikelets 0.23-0.26 cm long, obovate.

Fls. : November.

Distrib. : Rare on moist ground. Satara (Bole & Almeida, *op.cit.*).

*I. bicolor* Naik & Patunkar in Bull. Bot. Surv. India 15: 157, f. 1-7. (1973) 1976; Ved Prakash & Jain in Fasc. Fl. India 14: 14. 1984.



*Isachne borii* Hemadri  
 1. Habit 2. Spikelet 3. Lower glume 4. Upper lemma  
 5. Upper palea 6. Grain

Herbs, an  
 subterete; lig  
 ovate-lanceola  
 apex acute. Pa  
 0.28-0.3 cm lon

Fls. & Fr

Illus. : Na

Distrib. :  
 Aurangabad; I

*I. borii*  
 Jain in Fasc. I

Annuals  
 cm, linear-ob  
 Inflorescence  
 0.22-0.275 cm  
 cm, ellipso  
 yellowish-br

Fls. & F

Distrib.  
 other annual

Notes :

*I. disp*  
 7: 26. 1896;

Herbs  
 lanceolate,  
 long, green  
 dissimilar, v

Fls. &

Illus.  
 1988.

Distri

*I. ele*  
 Pres. Bom  
 187. 1935;  
 India 14: 1

Herbs, annual; culms terete, 30–45 cm tall, decumbent. Sheaths subterete; ligule hairy. Leaves 3.5–4.5 x 0.3–0.7 cm, narrowly ovate-lanceolate, hispid, margins entire or serrulate, cartilaginous, apex acute. Panicles narrowly effuse, 2–5 cm long. Spikelets ovoid, 0.28–0.3 cm long.

*Fls. & Frts.* : September–November.

*Illus.* : Naik & Patunkar, *op.cit.*

*Distrib.* : Rare in marshy places in open grasslands. Ahmednagar; Aurangabad; Kolhapur; Satara.

**I. borii** Hemadri in Indian Forester 97: 223. 1971; Ved Prakash & Jain in Fasc. Fl. India 14: 14. 1984.

Annuals, 15–75 cm high, erect; roots fibrous. Leaves c 15.0 x 0.6 cm, linear-oblong with tubercle-based hairs, margins thick, scabrid. Inflorescence a lax panicle, 5–20 x 2–10 cm. Spikelets 0.25–0.3 x 0.22–0.275 cm, subglobose – ellipsoid, pedicelled. Grains c 0.18 x 0.13 cm, ellipsoid, plano-convex with 3 ribs on the flat face, yellowish-brown.

*Fls. & Frts.* : August–December.

*Distrib.* : Rare; grows on the plateau in moist places along with other annuals and grasses. Pune; Sholapur.

*Notes* : Apparently endemic to Maharashtra State.

**I. dispar** Trin. Sp. Gram. 1, Ic. t. 86. 1826; Hook. f. Fl. Brit. India 7: 26. 1896; Bor, Grass. Ind. 580. 1960.

Herbs, annual, 15–35 cm tall; culms spongy. Leaves ovate-lanceolate, scaberulous. Inflorescence 2–4 cm long. Spikelets c 0.1 cm long, green or purple; glumes as long as spikelets, hairy; lemmas dissimilar, upper lemma chartaceous, hairy.

*Fls. & Frts.* : September–October.

*Illus.* : Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 785. 1988.

*Distrib.* : Bombay (Bor, *op.cit.*); Kolhapur; Pune; Satara; Thane.

**I. elegans** Dalz. in Dalz. & Gibbs. Bombay Fl. 291. 1861; Cooke, Fl. Pres. Bombay 3: 439. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 187. 1935; Bor, Grass. Ind. 580. 1960; Ved Prakash & Jain in Fasc. Fl. India 14: 18, figs. 1–10. 1984. 'Dunla'.

Herbs, elegant, 10–15 cm tall; culms densely tufted, procumbent-ascending. Leaves linear-lanceolate, margins serrulate. Panicles 5–10 cm long; rhachis slender. Spikelets 0.2–0.3 cm long, globose; glumes equal, hispid, suborbicular with purple margins; lemmas 0.25–0.3 cm long, orbicular, pale yellowish or straw coloured, puberulous.

Fls. & Frts. : September–January.

Illus. : Blatt. & McC. *op.cit.* t. 121; Ved Prakash & Jain, *op.cit.*, Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 786. 1988.

Distrib. : Ahmednagar; Bombay; Kolhapur; Nagpur; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

**I. globosa** (Thunb.) O. Ktze. Rev. Gen. Pl. 2: 778. 1891; Bor, Grass. Ind. 580. 1960; Ved Prakash & Jain in Fasc. Fl. India 14: 22. 1984. *Milium globosum* Thunb. Fl. Jap. 49. 1784. *Isachne australis* R. Br. Prodr. 196. 1810; Hook. f. Fl. Brit. India 7: 14. 1896; Cooke, Fl. Pres. Bombay 3: 439. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 188. 1935.

1. Panicles 2.5–4.0 cm long; leaf-blades up to 5 cm long

... var. *globosa*

1. Panicles 7–12 cm long; leaf-blades up to 10 cm long

... var. *effusa*

var. *globosa*. 'Daura'.

Herbs, slender, tufted, erect or suberect. Leaves 3.2–6.3 x 0.4–0.7 cm, linear-lanceolate or ovate-lanceolate. Panicles compact or effuse. Spikelets globose or globosely obovoid; lemmas unequal, lower elliptic, upper suborbicular.

Fls. & Frts. : August–February.

Illus. : Blatt. & McC. *op.cit.* t. 122; Ved Prakash & Jain, *op.cit.* 23, figs. 1–13; Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 787. 1988.

Distrib. : Ahmednagar; Bombay; Chandrapur; Dhule; Kolhapur; Nagpur; Nasik; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

var. *effusa* (Trin. ex Hook. f.) Senaratna, Grass. Ceylon 109. 1956; Bor, Grass. Ind. 580. 1960. *I. australis* R. Br. var. *effusa* Trin. ex Hook. f. Fl. Brit. India 7: 25. 1896.

Herbs, 30–40 cm high.

Fls. & Frts. : October–December.

Illus. : Blatt. & McC. Bombay Grass. 188, t. 122. 1935.

Distrib. : Ahmednagar; Chandrapur; Pune.

**I. graci**  
Ind. 581. 1960

Herbs, :  
Leaves 2–6  
Spikelets glo

Fls. & :

Illus. :

Distrib  
Satara; Sin

**I. list**  
Bombay 3:  
1935; Bor,  
14: 30. 198

Herb  
ovate-ellip  
long. Spik  
orbicular.

Fls.

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**I. i**  
Grass. I  
1984.

H  
compre  
elliptic  
acute.  
Spikele  
convex

F

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I

*I. gracilis* C. E. Hubb. in Kew Bull. 1927: 77. 1927; Bor, Grass. Ind. 581. 1960; Ved Prakash & Jain in Fasc. Fl. India 14: 25. 1984.

Herbs, annual, weak, erect from decumbent base, 12–20 cm high. Leaves 2–6 x 1.0–1.7 cm, elliptic. Panicles 5–10 cm long, effuse. Spikelets globose; lemmas unequal, lower elliptic, upper suborbicular.

Fls. & Frts. : September–December.

Illus. : Ved Prakash & Jain, *op.cit.* 24, figs. 1–15.

Distrib. : Ahmednagar; Kolhapur; Nasik; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

*I. lisboae* Hook. f. Fl. Brit. India 7: 22. 1896; Cooke, Fl. Pres. Bombay 3: 438. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 187. 1935; Bor, Grass. Ind. 581. 1960; Ved Prakash & Jain in Fasc. Fl. India 14: 30. 1984.

Herbs, annual, erect or suberect, rooting at lower nodes. Leaves ovate–elliptic, bulbous based hairy on either side. Inflorescence 5–8 cm long. Spikelets globose, up to 0.2 cm across; glumes apiculate; lemmas orbicular. Grains planoconvex.

Fls. & Frts. : September–October.

Illus. : Blatt. & McC. *op.cit.* t. 120.

Distrib. : Near marshy places. Kolhapur; Pune; Raigad; Satara.

Notes : Endemic to Western Ghats in Maharashtra and Karnataka.

*I. meeboldii* C. E. C. Fischer in Kew Bull. 1932: 323. 1932; Bor, Grass. Ind. 581. 1960; Ved Prakash & Jain in Fasc. Fl. India 14: 31. 1984.

Herbs, perennial; culms tufted, 30–45 cm tall. Sheaths compressed, weakly keeled, 4–7 cm long, ligule a hairy rim. Leaves elliptic–lanceolate, 7–21 x 0.6–1.2 cm, margins cartilaginous, apex acute. Panicles ovate–oblong or subpyramidal, 7–13 cm long, lax. Spikelets globose or obovoid, 0.2–0.23 cm long. Grains ellipsoid, dorsally convex, c 0.15 cm long.

Fls. & Frts. : August–December.

Illus. : Patunkar, Grass. Marathw. 264, f. 80. 1980.

Distrib. : Rare in pastures of open grasslands. Aurangabad.

**I. miliacea** Roth ex R. & S. Syst. Veg. 2: 476. 1817; Hook. f. Pl. Brit. India 7: 25. 1896; Cooke, Fl. Pres. Bombay 3: 439. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 189. 1935; Bor, Grass. Ind. 582. 1960; Ved Prakash & Jain in Fasc. Fl. India 14: 31. 1984.

Herbs, slender, annual, 10–25 cm tall; culms tufted. Leaves linear-lanceolate, hairy on both sides. Inflorescence 4–6 cm long. Spikelets 0.15–0.18 cm long, ellipsoid-ovoid; glumes hairy, as long as or shorter than spikelets; lemmas dissimilar, lower lemma elliptic, upper lemma ovate.

*Fls. & Frts.* : September–November.

*Illus.* : Blatt. & McC. *op.cit.* t. 123; Matthew, *Illus. Fl. Tamilnadu Carnatic* 2: tt. 882 & 883. 1982.

*Distrib.* : Kolhapur; Pune; Raigad; Ratnagiri; Satara; Sindhudurg.

**I. pulchella** Roth ex R. & S. Syst. Veg. 2: 476. 1817; Bor in Kew Bull. 1952: 321. 1952 & Grass. Ind. 582. 1960; Ved Prakash & Jain in Fasc. Fl. India 14: 33. 1984.

Herbs, annual, ascending, 30–35 cm high. Leaves 2.5–4.5 x 0.5–1.0 cm, ovate-lanceolate or ovate-elliptic, hirsute on both sides. Panicles 2–8 cm long, lax. Spikelets globose obovoid.

*Fls. & Frts.* : September–October.

*Illus.* : Matthew, Further *Illus. Fl. Tamilnadu Carnatic* 4: t. 789. 1988; Lakshminarasimhan & Sharma, *Fl. Nasik Dt.* 565, f. 50. 1991.

*Distrib.* : Chandrapur; Nasik; Pune; Satara.

**I. swaminathanii** Ved Prakash & Jain in Proc. Indian Acad. Sci. (Pl. Sci.) 92:19, f. 10. 1983 & in Fasc. Fl. India 14: 36. 1984.

Herbs. Leaves linear or broadly lanceolate, apex acute or acuminate, hairy, margins cartilaginous. Panicles 8–18 cm long; branches slender, c 6 cm long. Spikelets globose, 0.22–0.27 cm across; glumes broadly elliptic, obtuse, subequal, glabrous or sparsely setose; lemmas similar to glumes.

*Fls. & Frts.* : September–October.

*Illus.* : Ved Prakash & Jain, *op.cit.*

*Distrib.* : Bombay; Pune; Ratnagiri; Satara; Thane.

1. Margins of lower  
below middle :

2. Keel of upper  
middle

2. Keel of upper  
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3. Perenn

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6. Sessile sp

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## ISCHAEMUM L.

1. Margins of lower glume of sessile spikelet expanded below middle :
  2. Keel of upper glume of sessile spikelet winged above middle ... *I. indicum*
  2. Keel of upper glume of sessile spikelet not winged above middle, sometimes wing obscure (*I. thomsonianum*) :
    3. Perennials ... *I. thomsonianum*
    3. Annuals :
      4. Lower leaves of culms with 1 cm long petiole ... *I. zeylanicum*
      4. Lower leaves not petiolate :
        5. Spikelets c 0.5 cm long; apex of lower glume bicuspidate ... *I. thomsonianum*
        5. Spikelets 0.25–0.3 cm long; apex of lower glume not bicuspidate ... *I. timorense*
1. Margins of lower glume of sessile spikelet narrowly and evenly inturned from base to apex :
  6. Sessile spikelets unawned :
    7. Pedicel of pedicelled spikelet more than one-third the length of sessile spikelet ... *I. impressum*
    7. Pedicel of pedicelled spikelet less than one-third the length of sessile spikelet :
      8. Sessile spikelets 0.35–0.4 cm long ... *I. bolei*
      8. Sessile spikelets 0.65–0.75 cm long ... *I. huegelii*
  6. Sessile spikelets awned :
    9. Pedicel of pedicelled spikelet more than one-third the length of sessile spikelet :
      10. Lower glume of sessile spikelet flat, slightly convex or depressed in dorsal surface :
        11. Lower glume of sessile spikelet oblong, obtuse, perfectly smooth and glabrous ... *I. commutatum*
        11. Lower glume of sessile spikelet lanceolate or elliptic-lanceolate, dorsal surface pilose, flat or depressed ... *I. pilosum*
      10. Lower glume of sessile spikelet with a bulge in lower third :
        12. Lower glume of sessile spikelet with two tufts of hairs on margins about the middle ... *I. diplopogon*
        12. Lower glume without such tufts of hairs :
          13. Joints and pedicels bulged ... *I. kingii*
          13. Joints and pedicels linear ... *I. raizadæ*

9. Pedicel of pedicelled spikelet less than one-third the length of sessile spikelet :
14. Lower leaves distinctly petioled, cordate or sagittate at base :
  15. Joints of racemes linear-clavate or slightly clavate-turbinate; lower glume of sessile and pedicelled spikelets deeply and irregularly wrinkled ... *I. dolzellii*
  15. Joints of racemes distinctly turbinate; lower glumes not as above, laterally noded or nodules joined across dorsal surfaces as sharp ridges :
  16. Sessile and pedicelled spikelets narrow in proportion to their length, 0.6-0.8 x 0.15 cm; nodules on margins of lower glumes interlocking and joined by distinct transverse ridges ... *I. ritcheii*
  16. Sessile and pedicelled spikelets not so narrow, 0.6-0.75 x 0.2 cm, without inter-locking nodules; nodules connected by bar-relief ridges ... *I. semisagittatum*
14. Lower leaves not petioled, acute, tapering, rounded, truncate or cordate at base :
  17. Tip of lower glume of sessile spikelet auriculate winged on one side ... *I. mangaluricum*
  17. Tip of lower glume of sessile spikelet not winged, if winged, wings narrow :
  18. Lower glume of pedicelled spikelet with a broad wing on one margin ... *I. travancorensis*
  18. Lower glume of pedicelled spikelet not winged as above :
  19. Lower glume of sessile spikelet coriaceous with nodules on rounded keels, sometimes the latter inconspicuous :
    20. Lower leaves rounded or shallowly cordate ... *I. tumidum*
    20. Lower leaves tapering to base :
      21. Perennials; racemes terminal to culms ... *I. barbatum*
      21. Annuals; racemes in fascicles from uppermost nodes; culms stilt-rooted ... *I. santapauli*
  19. Lower glume of sessile spikelet crustaceous with side nodules joined by sharp ridges, or chartaceous with obscure nodules and ridges :
    22. Ridges shallow; dorsal surface of lower glume often almost smooth and

frequently den  
leaves shallow

22. Ridges deep; l  
or pilose; leav

23. Spikelet

23. Spikelet

### Ischaem

Kew Bull. 15

*aristatum* sen

Hack. in DC.

1896. *I. goebe*

179. 1960.

### Perenn

decumbent

sometimes a

and overlap

deep. Inflor

bicuspidate

keels.

Fls. &

Illus.

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frequently densely covered with white hairs;  
leaves shallowly cordate at base

22. Ridges deep; lower glume glabrous on dorsal surface,  
or pilose; leaves tapering at base :

*I. molle*

23. Spikelets up to 0.6 cm long; rather slender plants

*I. rugosum*

23. Spikelets 0.8–0.9 cm long; plants robust

*I. bombaiense*

**Ischaemum barbatum** Retz. Obs. Bot. App. 6: 35. 1791; Bor in Kew Bull. 15: 411. 1961 & Grass. Ind. App. I. 1973 (Repr. ed.). *I. aristatum sensu* Hack. non L. 1753 ssp. *imberbe* Hack. var. *imbricatum* Hack. in DC. Monogr. Phan. 6: 203. 1889; Hook. f. Fl. Brit. India 7: 127. 1896. *I. goebelii* Hack. in Oestr. Bot. Zeit. 51: 149. 1901; Bor, Grass. Ind. 179. 1960.

Perennials; culms 60–120 cm tall, stout, erect or somewhat decumbent at base. Leaves: lower narrowed at both ends, upper sometimes abruptly narrowed at base, up to 20 x 1 cm; sheaths loose and overlapping below; ligule a prominent membrane up to 0.35 cm deep. Inflorescence of 2 racemes. Upper glume of sessile spikelet shortly bicuspidate; lower glume boat-shaped, keeled upwards, ciliate along keels.

*Fls. & Frts.* : November–December.

*Illus.* : Sreek. & Nair, Fl. Kerala Grass. 124, t. 22. 1991.

*Distrib.* : Bombay; Pune; Ratnagiri; Satara; Sindhudurg.

*I. bolei* Almeida in Indian Forester 98: 236, figs. 1–11. 1972.

Annuals, c 75 cm tall, erect or decumbent; culms branched from base. Leaves 3.5–10.0 x 1 cm, linear-lanceolate, lower leaves petiolate, upper sessile, hairy on both sides, base cordate or sagittate. Racemes c 4 cm long. Sessile spikelets 0.35–0.4 cm long; lower glumes narrowly and evenly inturned, with 2–4 nodules on margins, upper glume boat-shaped; 1-nerved; pedicelled spikelets almost same as sessile spikelets.

*Fls. & Frts.* : October–November.

*Illus.* : Almeida, *op.cit.*

*Distrib.* : Sindhudurg (Almeida, *op.cit.*).

*I. bombaiense* Bor in J. Bombay nat. Hist. Soc. 49: 165. 1950 & Grass. Ind. 178. 1960.

Annuals; culms upto 30 cm tall, slender, branched at nodes. Leaves c 12.0 x 0.7 cm, linear-acuminate, narrowed to base, bulbous hairy;

sheaths loose, smooth, striate; ligules scarious. Racemes in pairs seated at tip of a stout peduncle. Sessile spikelets oblong, acute; pedicelled spikelets with broad wing on one margin.

*Fls. & Frts.* : October.

*Distrib.* : Bombay; Pune (Bor, *op.cit.*); Ratnagiri.

**I. commutatum** Hack. in DC. Monogr. Phan. 6: 209. 1889; Hook. f. Fl. Brit. India 7: 131. 1896; Bor, Grass. Ind. 178. 1960.

Herbs, annuals or perennials; culms slender, 20-30 cm tall. Leaves ovate-lanceolate or elliptic-lanceolate, base rounded or cordate, sessile or sometimes narrowed into 3-4 cm long petioles, hairy. Racemes 2.5-4.5 cm long. Sessile spikelets 0.4-0.6 cm long; lower glume smooth or with 1-3 shallow, marginal nodules; lower glume of pedicelled spikelet smooth, one keeled, winged.

*Fls. & Frts.* : September-October.

*Illus.* : Matthew, *Illus. Fl. Tamilnadu Carnatic* 2: tt. 884 & 885. 1982.

*Distrib.* : Kolhapur; Nasik; Pune (Bor, *op.cit.*); Raigad; Ratnagiri; Satara; Sindhudurg.

**I. dalzellii** Stapf ex Bor in Kew Bull. 1951: 448. 1952 & Grass. Ind. 178. 1960; Kulkarni & Wadhwa in J. Bombay nat. Hist. Soc. 70: 237, f. 3. 1973.

Herbs, annual or perennial, tufted, 30-50 cm tall. Leaves linear-lanceolate. Racemes 3-5 cm long. Sessile spikelets 0.6 cm long; lower glume obliquely ovate, uniformly incurved, transversely obscurely ridged, upper glume boat shaped; lower glume of pedicelled spikelet obliquely ovate, keel scaberulous.

*Fls. & Frts.* : October-November.

*Illus.* : Kulkarni & Wadhwa, *op.cit.*; Kulkarni, Fl. Sindhudurg Dt. 540, figs. 1-8. 1987.

*Distrib.* : Bombay; Kolhapur; Pune; Raigad; Ratnagiri; Sindhudurg.

**I. diplopogon** Hook. f. Fl. Brit. India 7: 129. 1896; Cooke, Fl. Pres. Bombay 3: 478. 1958 (Repr.ed.); Blatt. & McC. Bombay Grass. 14. 1935; Bor, Grass. Ind. 178. 1960.

Herbs, erect, branched from base and upwards. Leaves linear-lanceolate, acuminate; ligules oblong, membranous. Racemes compressed. Spikelets up to 0.6 cm long. Grains lanceolate, yellowish-brown.

*Fls. & Frts.* :

*Illus.* : Blatt.

*Distrib.* : Al  
Ratnagiri; Satara

**I. huegelii**  
Brit. India 7: 13  
Bor in Kew Bull.

Culms slender  
Leaves up to 15  
0.65-0.75 cm  
connected by base  
ones.

*Distrib.* :

**I. impressa**  
Fl. Brit. India  
Grass. Ind. 180

Herbs, annual  
linear-lanceolate  
cm long. Lower  
depressed and  
on keels; pedicel

*Fls. & Frts.*

*Distrib.*  
Kolhapur; Nasik  
Sindhudurg.

**I. indica**  
Grass. Ind. 180  
90, f. 2. 1789  
Brit. India 7: 129  
(ed.); Blatt. & McC.  
1753; Hook.

1. Leaves glaucous

1. Leaves anthers

subventral

Herbs  
0.4-0.6 cm

*Fls. & Frts.* : September–December.

*Illus.* : Blatt. & McC. *op.cit.* t. 8.

*Distrib.* : Ahmednagar; Bombay; Kolhapur; Nasik; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

***I. huegelii*** Hack. in DC. Monogr. Phan. 6: 252. 1889; Hook. f. Fl. Brit. India 7: 139. 1896; Bor, Grass. Ind. 179. 1960. *I. inerme* Stapf ex Bor in Kew Bull. 1951: 448. 1952.

Culms slender, decumbent below, rooting at lower nodes, purple. Leaves up to 15 x 2 cm. Racemes mostly unbranched. Sessile spikelets 0.65–0.75 cm long, lower glume with 3–4 nodules on margins, connected by bar relief and ridges; pedicelled spikelets similar to sessile ones.

*Distrib.* : Bombay (Bor, *op.cit.*).

***I. impressum*** Hack. in DC. Monogr. Phan. 6: 210. 1889; Hook. f. Fl. Brit. India 7: 132. 1896; Blatt. & McC. Bombay Grass. 17. 1935; Bor, Grass. Ind. 180. 1960.

Herbs, annual, erect, 20–30 cm tall. Leaves 7–10 x 0.7–1.5 cm, linear-lanceolate, sessile or petiolate, hairy on both sides. Racemes 2–5 cm long. Lower glume of sessile spikelet 0.6–0.7 cm long, ovate, hairy, depressed and concave in upper half, upper glume boat-shaped, winged on keels; pedicelled spikelet 0.45 cm long, obliquely ovoid.

*Fls. & Frts.* : September–January.

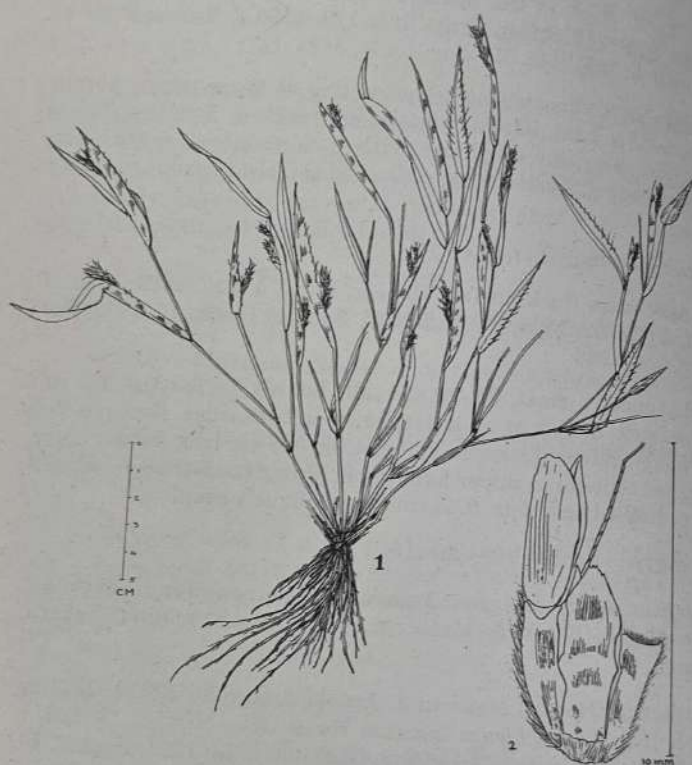
*Distrib.* : Ahmednagar; Amaravati; Aurangabad; Bombay; Kolhapur; Nasik (Blatt. & McC. *op.cit.*); Pune; Ratnagiri; Satara; Sindhudurg.

***I. indicum*** (Houtt.) Merr. in J. Arnold Arbor. 19: 320. 1938; Bor, Grass. Ind. 180. 1960. *Phleum indicum* Houtt. Nat. Hist. 2, 13: 198, t. 90, f. 2. 1782. *Ischaemum ciliare* Retz. Obs. Bot. 6:36. 1791; Hook. f. Fl. Brit. India 7: 133. 1896; Cooke, Fl. Pres. Bombay 3: 481. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 18. 1935. *I. aristatum* auct. non L. 1753; Hook. f. *op.cit.* 126; Cooke, *op.cit.* 476; Blatt. & McC. *op.cit.* 11.

- |  |                             |
|--|-----------------------------|
| 1. Leaves glabrous or puberulous               | ... subvar. <i>indicum</i>  |
| 1. Leaves and sheaths villous with erect hairs | ... subvar. <i>villosum</i> |

subvar. ***indicum***. 'Bara', 'Bherda', 'Guj', 'Putena'.

Herbs, erect or suberect, tufted, up to 60 cm high. Leaves 3.0–6.5 x 0.4–0.6 cm, linear or linear-lanceolate, apex acuminate; ligule



*Ischaemum impressum* Hack.  
1. Habit 2. Spikelet

membranous, cili-  
spikelets 0.4–0.5  
Grains oblong.

Fls. & Frts. :

Illus. : Blat  
facing p. 263, t  
Carnatic 4: tt. 79

Distrib. :  
Kolhapur; Nag  
Satara; Sindhu

subvar. vil-  
villosus Nees in  
ciliare var. vill-  
Hook. f. Fl. Bri

Perennial  
sheaths villo-  
ovoid-oblong  
ovoid-oblong.

Fls. & F

Distrib.

*I. kingi*  
1960.

Annual  
Racemes 2,  
of c 2.5 cm l

Fls. &

Distri  
Thane.

*I. ma*  
Pres. Mad  
182. 1960.  
DC. Mono

Ann  
5–15 x 0.  
hairy on  
long, awr

membranous, ciliate. Racemes terminal, 3.0–5.5 cm long. Sessile spikelets 0.4–0.5 cm long, oblong; pedicelled spikelets c 0.3 cm long. Grains oblong.

*Fls. & Frts.* : September–February.

*Illus.* : Blatt. & McC. *op.cit.* tt. 12 & 16; Gilliland, *Fl. Malaya* 3: facing p. 263, t. 20. 1971; Matthew, *Further Illus. Fl. Tamilnadu Carnatic* 4: tt. 790 & 791. 1988.

*Distrib.* : Ahmednagar; Aurangabad; Bombay; Chandrapur; Kolhapur; Nagpur; Nasik; Osmanabad; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

subvar. *villosum* (Nees) Bor, *Grass. Ind.* 180. 1960. *Spodiopogon villosus* Nees in Hook. & Arn. *Bot. Beech. Voy.* 242. 1838. *Ischaemum ciliare* var. *villosum* (Nees) Hack. in DC. *Monogr. Phan.* 6: 227. 1889; Hook. f. *Fl. Brit. India* 7: 134. 1896.

Perennial herbs; culms tufted, 50–100 cm high; nodes, leaves and sheaths villous with erect hairs. Racemes 2. Sessile spikelets ovoid-oblong or obovoid, 5–6 mm long, awned; pedicelled spikelets ovoid-oblong, 5–5.5 mm long.

*Fls. & Frts.* : October–December.

*Distrib.* : Chandrapur; Pune; Raigad; Ratnagiri; Sindhudurg.

*I. kingii* Hook. f. *Fl. Brit. India* 7: 129. 1896; Bor, *Grass. Ind.* 182. 1960.

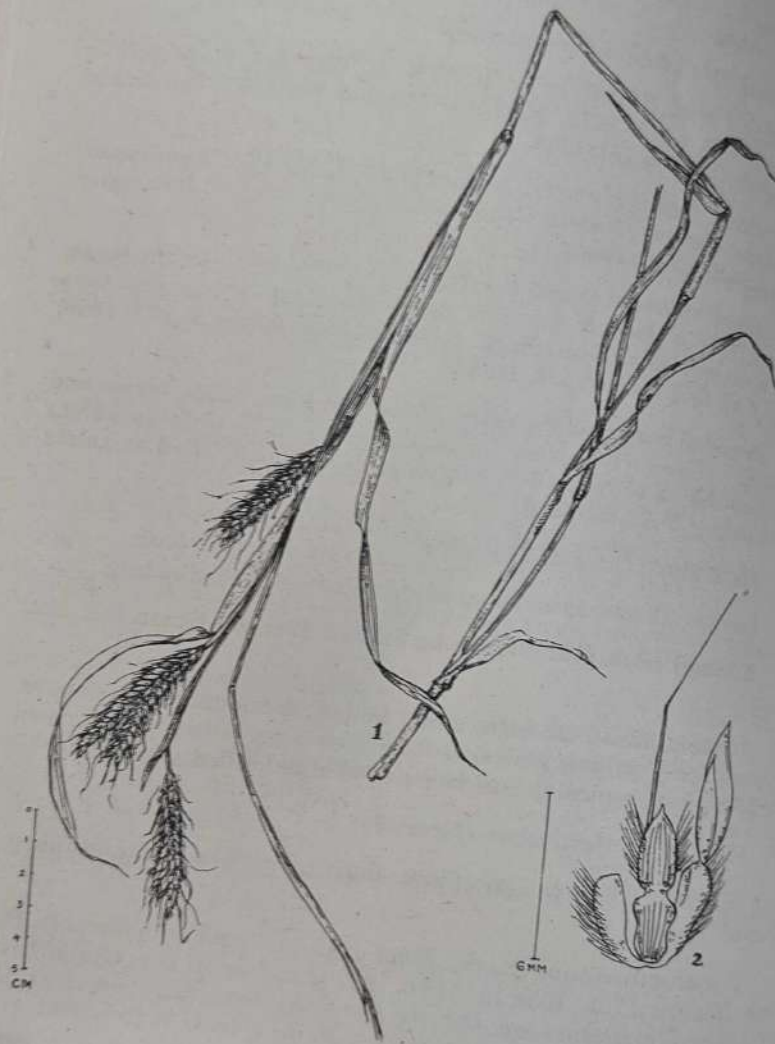
Annuals, 25–30 cm high, erect. Lower leaves narrowed at base. Racemes 2, c 4 cm long. Spikelets 0.8–0.9 cm long; sessile with an awn of c 2.5 cm long, geniculate just below middle; pedicelled awnless.

*Fls. & Frts.* : September – November.

*Distrib.* : Ahmednagar; Pune; Ratnagiri; Satara; Sindhudurg; Thane.

*I. mangaluricum* (Hack.) Stapf ex C.E.C. Fischer in Gamble, *Fl. Pres. Madras* 1723. 1934 [3: 1194. 1957 (Repr. ed.)]; Bor, *Grass. Ind.* 182. 1960. *I. aristatum* ssp. *imberbe* Hack. var. *mangaluricum* Hack. in DC. *Monogr. Phan.* 6: 204. 1889; Hook. f. *Fl. Brit. India* 7: 127. 1896.

Annuals or perennials, 50–100 cm high, robust, tufted. Leaves 5–15 x 0.4–0.9 cm, linear lanceolate, base narrow, cordate, deciduous hairy on both sides. Racemes 5–9 cm long. Sessile spikelets c 0.5 cm long, awns c 0.6 cm long; lower glumes ovate, oblique, 2/3 portion hard,



*Ischaemum kingii* Hook. f.  
1. Habit 2. Spikelet

*Ischaemum*



*Ischaemum mangaluricum* (Hack.) Stapf ex C.E.C. Fischer  
1. Habit 2. Lower glume 3. Spikelet



*Ischaemum molle* Hook. f.  
1. Habit 2. Spikelet

nodules al  
glumes c  
c 0.45 cm l

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nodules along margin, tip scarious, winged on one side, glabrous; upper glumes c 0.5 cm long, elliptic, keeled, pubescent; pedicelled spikelets c 0.45 cm long, unawned.

*Fls. & Frts.* : October–May.

*Distrib.* : Bombay; Ratnagiri; Sindhudurg.

*I. molle* Hook. f. *Fl. Brit. India* 7: 128. 1896; Cooke, *Fl. Pres. Bombay* 3: 477. 1958 (Repr. ed.); Blatt. & McC. *Bombay Grass*. 13. 1935; Bor, *Grass. Ind.* 183. 1960.

Herbs, stout, 70–100 cm tall, leafy. Leaves linear, sparsely hairy. Racemes 6–8 cm long. Spikelets 0.4–0.5 cm long; lower glume of sessile spikelet broadly ovate, coriaceous, upper glume chartaceous, keeled, keel winged from middle; lower lemma ovate; pedicelled spikelets smaller than sessile spikelets.

*Fls. & Frts.* : October–December.

*Distrib.* : Ahmednagar; Bombay; Chandrapur; Kolhapur; Nagpur; Nasik (Blatt. & McC. *op. cit.*); Pune; Raigad; Ratnagiri; Sindhudurg; Thane.

*I. pilosum* (Klein ex Willd.) Wight in *Madras Lit. Sci. J.* 138. 1835 (also reprint p.2, t.2); Hook. f. *Fl. Brit. India* 7: 130. 1896; Cooke, *Fl. Pres. Bombay* 3: 479. 1958 (Repr. ed.); Blatt. & McC. *Bombay Grass*. 14. 1935; Bor, *Grass. Ind.* 183. 1960. *Andropogon pilosus* Klein ex Willd. *Sp. Pl.* 4: 920. 1806. 'Kunda', 'Nuth'.

Herbs, perennial, erect up to 1.2 m high. Leaves 10.0 x 0.4 cm, linear; ligules membranous. Racemes 8–12 cm long, pilose. Sessile spikelets upto 0.6 cm long, narrowly lanceolate, awns c 0.7 cm long; pedicelled spikelets 0.4–0.5 cm long, awns short.

*Fls. & Frts.* : September–March.

*Illus.* : Blatt. & McC. *op.cit.* t. 9.

*Distrib.* : Common in all districts.

*I. raizadae* Hemadri & Billore in *Indian Forester* 96: 318. 1970; Bor in *Indian Forester* 97: 73. 1971. *I. borii* Almeida in *J. Bombay nat. Hist. Soc.* 66: 513. (1969) 1970.

Herbs, annual, erect or suberect. Leaves 5–8 x 0.5–1.0 cm, linear-lanceolate, base rounded, apex acute to acuminate. Racemes 2–4 cm long excluding awns. Spikelets lanceolate.

*Fls. & Frts.* : September–November.

*Illus.* : Hemadri & Billore, *op.cit.* 320, f. 1-13; Almeida, *op.cit.* 114, f. A-H.

*Distrib.* : Rare on rocks and in rock crevices along streams, near water falls. Kolhapur; Nasik; Ratnagiri; Sindhudurg; Thane.

*Notes* : *Ischaemum raizadae* Hemadri & Billore was published in *Indian Forester* 1970 April with holotype K.V. Billore 115450A from Sahyadry Ghat near Harishchandragarh in Thane district. *I. borii* Almeida was published in *J. Bombay nat. Hist. Soc.* on 20th June, 1970 with holotype MRA 895 collected from Amboli, Savantwadi. Both the species are conspecific (Bor, *op.cit.*).

*I. ritchiei* Stapf ex Bor in *Kew Bull.* 1951: 449. 1952 & *Grass. Ind.* 184. 1960.

Herbs, annual; culms geniculately ascending, 60-80 cm tall, rooting at basal nodes. Leaves linear lanceolate. Racemes 2: lower glume of sessile spikelet c 0.8 cm long, 3/4 portion coriaceous, margins nodular; upper glume c 0.65 cm long, oblong, 3-nerved, carinate; lemma oblong-lanceolate, c 0.6 cm long, upper lemma c 0.5 cm long.

*Fls. & Frts.* : October-November.

*Distrib.* : Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

*I. rugosum* Salisb. *lc. Strip. Rar.* 1, t. 1. 1791; Hook. f. *Fl. Brit. India* 7: 127. 1896; Cooke, *Fl. Pres. Bombay* 3: 477. 1958 (Repr. ed.); Blatt. & McC. *Bombay Grass.* 12. 1935; Bor, *Grass. Ind.* 184. 1960. 'Bardi', 'Lag'.

Herbs, annual, erect or ascending up to 1 m high. Leaves 3-11 x 0.5-1.2 cm, narrowly linear lanceolate, hairy. Racemes 2-9 cm long. Sessile spikelets c 0.5 cm long, oblong-ovate; pedicelled spikelets same as sessile.

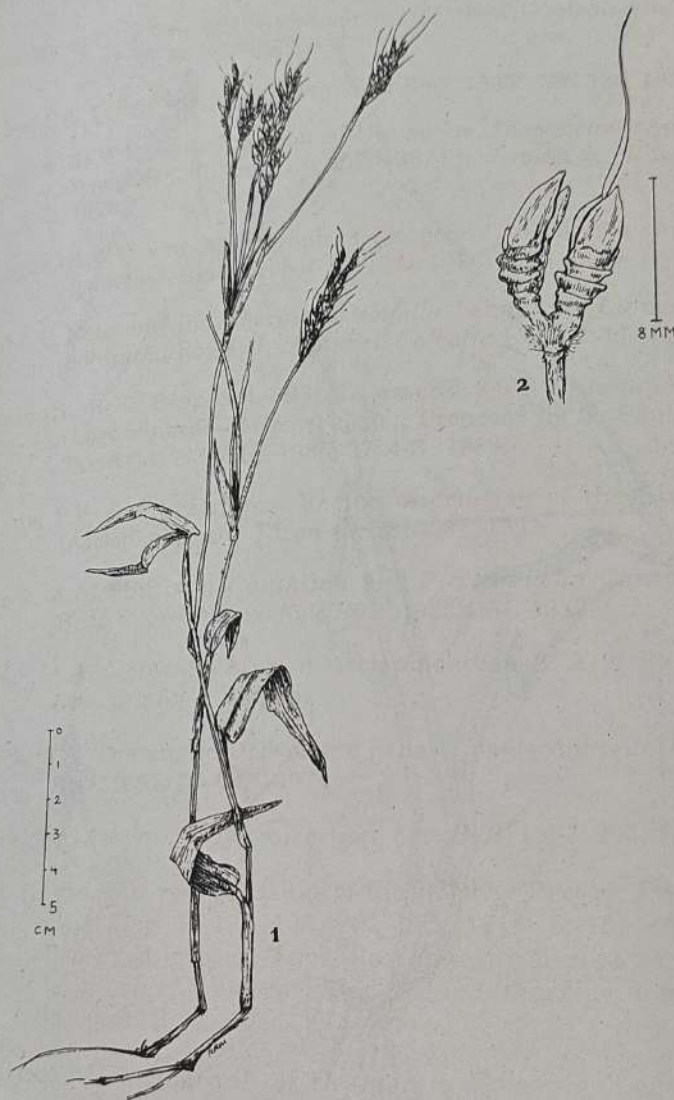
*Fls. & Frts.* : September-January.

*Illus.* : Blatt. & McC. *op.cit.* t. 7; Gilliland, *Fl. Malaya* 3: facing p. 262, t. 19. 1971; Patunkar, *Grass. Marathw.* 76, f. 22. 1980; Matthew, *Further Illus. Fl. Tamilnadu Carnatic* 4: tt. 792 & 793. 1988.

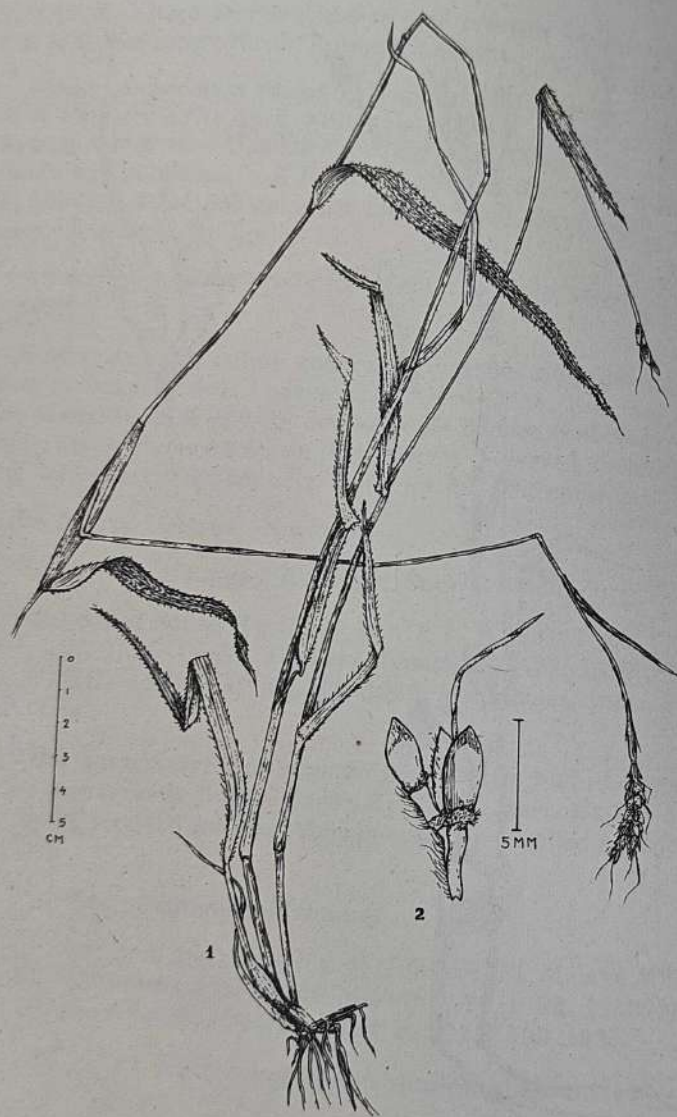
*Distrib.* : Common throughout in shallow stagnant waters along margins of ponds.

*I. santapau* Bor in *J. Bombay nat. Hist. Soc.* 49: 167. 1950 & *Grass. Ind.* 185. 1960. 'Tol'.

Herbs, 30-45 cm high; culms stout, supported by stilt roots emerging from lower nodes. Leaves 11-25 x 0.5-0.8 cm, linear-



*Ischaemum ritchiei* Stapf ex Bor  
1. Habit 2. Spikelet



*Ischaemum santapaui* Bor  
1. Habit 2. Spikelet

lanceolate. Racem  
callus.

Fls. & Frts.

Illus. : Lak  
1991.

Distrib. :  
Thane.

*I. semisa*  
India 7: 130. 1  
Blatt. & McC.  
*conjugatum* Ro  
*dasyantha* Ha  
Cooke, op.cit.

Herbs, e  
oblong-lance  
villous. Sessil  
pedicelled spi

Fls. & F

Illus. : F

Distrib.  
Kolhapur; N

*I. thori*  
Madras 172  
1960; U. R.  
*murinum* H

Herbs  
c 5 cm long  
oblong, kee

Fls. &

Distrib

*I. ti*  
Brit. India  
Grass. Ind

Pere  
9-25 x 0.

lanceolate. Racemes c 7 cm long. Spikelets c 0.5 cm long with villous callus.

*Fls. & Frts.* : September–November.

*Illus.* : Lakshminarasimhan & Sharma, Fl. Nasik Dt. 570, tf. 51. 1991.

*Distrib.* : Bombay; Nasik; Pune; Raigad; Ratnagiri; Sindhudurg; Thane.

*I. semisagittatum* Roxb. Fl. Ind. 1: 322. 1820; Hook. f. Fl. Brit. India 7: 130. 1896; Cooke, Fl. Pres. Bombay 3: 479. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 15. 1935; Bor, Grass. Ind. 185. 1960. *I. conjugatum* Roxb. *op.cit.* 323; Hook. f. *op.cit.* 131. *I. semisagittatum* var. *dasyantha* Hack. Monog. Andropog. in DC. Monog. Phan. 6: 209. 1889; Cooke, *op.cit.* 480. 'Ber', 'Dalaga'.

Herbs, erect, up to 60 cm high. Leaves 2.2–9.5 x 0.5–2.0 cm, oblong–lanceolate; ligules oblong. Racemes 2.4–4.5 cm long, softly villous. Sessile spikelets 0.4–0.6 cm long, callus bearded with long hairs; pedicelled spikelets shorter and narrower than sessile.

*Fls. & Frts.* : October–December.

*Illus.* : Blatt. & McC. *op.cit.* t. 10.

*Distrib.* : Ahmednagar; Bombay; Dhule (Blatt. & McC. *op.cit.*); Kolhapur; Nasik; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

*I. thomsonianum* Stapf ex C.E.C. Fischer in Gamble, Fl. Pres. Madras 1722. 1934 [3: 1193. 1957 (Repr. ed.)]; Bor, Grass. Ind. 185. 1960; U. R. Deshpande & N. P. Singh, Grass. Maharashtra 75. 1986. *I. murinum* Hook. f. Fl. Brit. India 7: 135. 1896 *non* Forst. 1786.

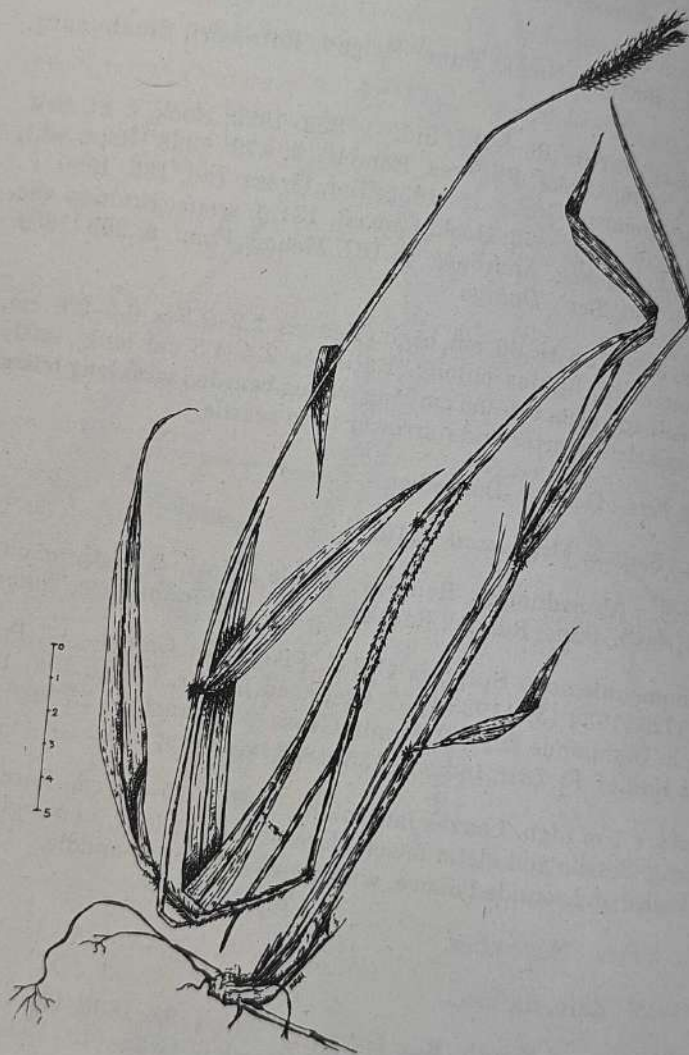
Herbs, c 1 m high. Leaves lanceolate, 7–15 x 0.9–1.3 cm. Racemes c 5 cm long. Sessile spikelets: lower glume c 0.4 cm long; upper glume oblong, keeled and rounded above, with a tuft of hairs in middle.

*Fls. & Frts.* : November.

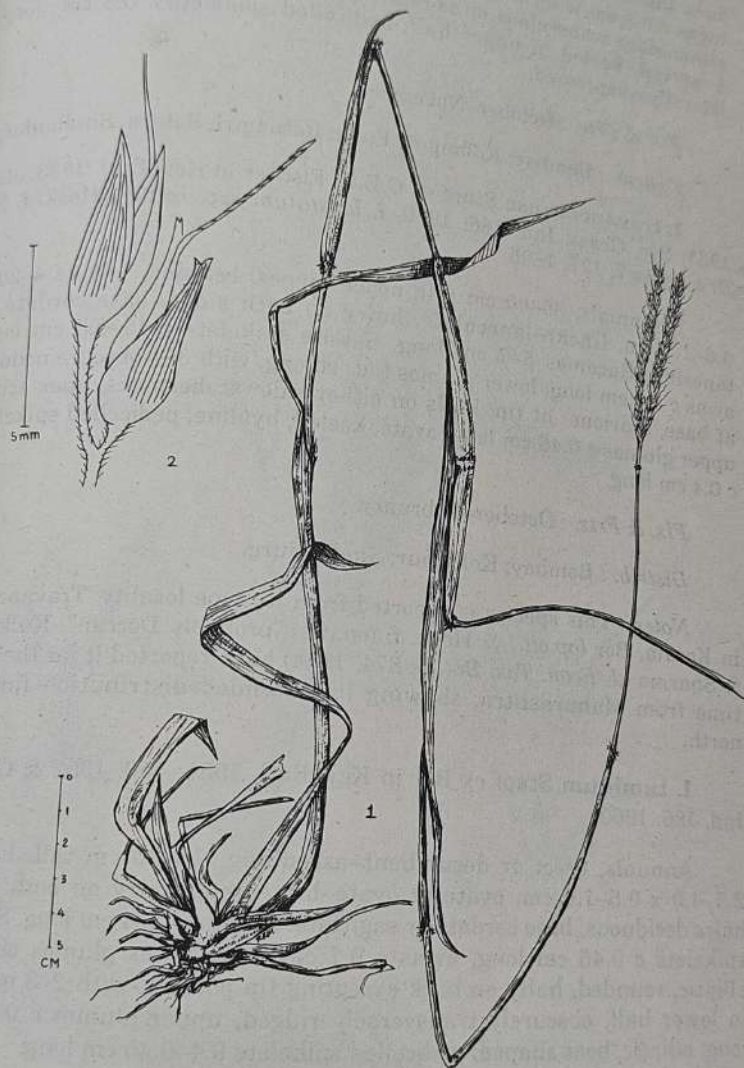
*Distrib.* : Rare. Satara.

*I. timorense* Kunth, Rev. Gram. 1: 369, t. 98. 1830; Hook. f. Fl. Brit. India 7: 136. 1896; Blatt. & McC. Bombay Grass. 19. 1935; Bor, Grass. Ind. 185. 1960.

Perennials, 60–120 cm tall, tufted; young nodes bearded. Leaves 9–25 x 0.8–1.5 cm, linear–lanceolate, deciduous hairy on both sides,



*Ischaemum thomsonianum* Stapf ex C.E.C. Fischer



*Ischaemum timorense* Kunth  
1. Habit 2. Spikelet

base tapering. Racemes 6–8 cm long. Sessile spikelets c 0.5 cm long, awns c 0.8 cm long; lower glumes ovate, flat, c 8–10-nerved, keels on either sides scaberulous on nerves; upper glumes c 0.5 cm long, ovate, 5-nerved, keeled in upper half; pedicelled spikelets c 0.5 cm long, laterally compressed.

*Fls. & Frts.* : October–November.

*Distrib.* : Bombay; Kolhapur; Pune; Ratnagiri; Satara; Sindhudurg.

**I. travancorensis** Stapf ex C.E.C. Fischer in Kew Bull. 1933: 353. 1933; Bor, Grass. Ind. 186. 1960. *I. aristatum* ssp. *rottleri* Hook. f. Fl. Brit. India 7: 127. 1896.

Perennials, 30–60 cm tall; nodes (upper) bearded. Leaves 4–20 x 0.6–1.5 cm, linear-lanceolate, hairy on both sides, base cordate or tapering. Racemes 5–7 cm long. Sessile spikelets 0.45–0.5 cm long, awns c 1.4 cm long; lower glumes flat, oblong, with 3–4 obscure nodules at base, scarious at tip, keels on either side scaberulous, apex acute, upper glumes c 0.45 cm long, ovate, keeled, hyaline; pedicelled spikelets c 0.4 cm long.

*Fls. & Frts.* : October–February.

*Distrib.* : Bombay; Kolhapur; Sindhudurg.

*Notes* : This species is reported from its type locality 'Travancore' in Kerala, Bor (*op.cit.*) & Hook. f. (*op.cit.*) "probably Deccan". Kulkarni & Sharma (*J. Econ. Tax. Bot.* 5: 874. 1984) have reported it for the first time from Maharashtra, showing its extended distribution further north.

**I. tumidum** Stapf ex Bor in Kew Bull. 1951: 450. 1952 & Grass. Ind. 186. 1960.

Annuals, erect or decumbent-ascending, 15–30 cm tall. Leaves 2.5–4.0 x 0.5–1.0 cm, ovate or ovate-lanceolate, hairy on both sides, hairs deciduous, base cordate or sagittate. Racemes 2–4 cm long. Sessile spikelets c 0.45 cm long, awns c 0.7 cm long; lower glumes oblong-elliptic, rounded, hairy on back excepting tip portion, with 2–3 nodules in lower half, obscurely transversely ridged, upper glumes c 0.45 cm long, elliptic, boat shaped; pedicelled spikelets 0.4–0.45 cm long.

*Fls. & Frts.* : September–December.

*Distrib.* : Bombay; Nagpur; Nasik; Osmanabad; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.



Isc



*Ischaemum travancorense* Stapf ex C.E.C. Fischer  
1. Habit 2. Spikelet

*I. zeylanicum* Bor, Grass. Ind. 186. 1960; U. R. Deshpande & N. P. Singh, Grass. Maharashtra 75. 1986.

Annuals. Lower leaves of culms with a petiole c 1 cm long. Spikelets less than 0.25 cm long.

*Illus.* : Sreek. & Nair, Fl. Kerala Grass. 170, t. 36. 1991.

*Distrib.* : Bombay (Bor, *op.cit.*).

#### ISEILEMA Anderss.

- |   |     |                          |
|---|-----|--------------------------|
| 1. Pedicels of involucre spikelets as broad as long   | ... | <i>I. anthephoroides</i> |
| 1. Pedicels of involucre spikelets longer than broad at apex :  |     |                          |
| 2. Tubercles not present on spatheoles or spikelets   | ... | <i>I. laxum</i>          |
| 2. Tubercles present on spatheoles and/or on margins of involucre spikelets :   |     |                          |
| 3. Clusters of spikelets in dense fascicles; hermaphrodite spikelets longer (0.55–0.65 cm) than involucre, which are 0.4–0.45 cm long | ... | <i>I. holei</i>          |
| 3. Clusters of spikelets not in dense fascicles; hermaphrodite spikelets as long as involucre, which are 0.35–0.45 cm long            | ... | <i>I. prostratum</i>     |

*Iseilema anthephoroides* Hack. in DC. Monogr. Phan. 6: 683. 1889; Hook. f. Fl. Brit. India 7: 219. 1896; Blatt. & McC. Bombay Grass. 112. 1935; Bor, Grass. Ind. 187. 1960. 'Tambadgota'.

Herbs, perennial c 30 cm high, erect or prostrate. Leaves 4–7 x 0.2 cm, linear oblong. Involucre spikelets 0.4–0.6 cm long, strongly nerved; hermaphrodite spikelets awned. Grains oblong-ellipsoid, brown.

*Fls. & Frts.* : August–December.

*Illus.* : Blatt. & McC. *op.cit.* t. 72; Matthew, *Illus. Fl. Tamilnadu Carnatic* 2: tt. 886 & 887. 1982.

*Distrib.* : Common throughout in open grasslands.

*I. holei* Haines, Bot. Bih. Or. 2: 1055. 1924 [3: 1103. 1961 (Repr. ed.)]; Bor, Grass. Ind. 188. 1960; U. R. Deshpande & N. P. Singh, Grass. Maharashtra 76. 1986.

Herbs, annual; culms tufted, compressed, 60–100 cm tall. Sheaths 3.5–8.5 cm long; ligule membranous. Leaves 20–60 x 0.3–0.5 cm, linear-lanceolate, apex acute to acuminate. Panicles linear, clusters of

spikelets in dense fascicles 0.48–0.5 cm long, hermaphrodite spikelets long. Grains ellipsoid.

*Fls. & Frts.* : Oct

*Distrib.* : Auran

*I. laxum* Hack. Brit. India 7: 218. 1896; Blatt. & McC. Bombay Grass. 112. 1935. 'Moshi', 'Mus', 'Shad'

Herbs, erect, tufted. Culms all cauline or lower nodes racemiform. Involucre spikelets lanceolate, narrowly lanceolate

*Fls. & Frts.* : Aug

*Illus.* : Maheshwari, *Fl. Tamilnadu*

*Distrib.* : Common

*I. prostratum* Hack. 1856; Bor, Grass. Ind. 188. 1960. 1771. *Iseilema wightii* Hook. f. 1896; Cooke, Fl. Brit. India 7: 219. 1896; Bombay Grass. 112. 1935.

Herbs, perennial, 20–50 cm tall, nodes compound, 10–15 cm long, oblong-lanceolate, long; lower glumes obtusely keeled

*Fls. & Frts.* : Aug

*Illus.* : Patil

*Distrib.* : Chandrapur, Dhule, Satara (Blatt. & McC. *op.cit.* t. 72; Matthew, *Illus. Fl. Tamilnadu Carnatic* 2: tt. 886 & 887. 1982.)

spikelets in dense fascicles. Involucral spikelets oblong-lanceolate, 0.48–0.5 cm long, obtuse; pedicelled spikelets much reduced; hermaphrodite spikelets linear or lanceolate-acuminate, 0.45–0.5 cm long. Grains ellipsoid.

*Fls. & Frts.* : October–February.

*Distrib.* : Aurangabad.

*I. laxum* Hack. in DC. Monogr. Phan. 6: 682. 1889; Hook. f. Fl. Brit. India 7: 218. 1896; Cooke, Fl. Pres. Bombay 3: 516. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 113. 1935; Bor, Grass. Ind. 188. 1960. 'Moshi', 'Mus', 'Shadta', 'Tambit'.

Herbs, erect, tufted, up to 50 cm high. Leaves 4–27 x 0.3–0.5 cm, all cauline or lower radical with equitant sheaths, linear. Panicles racemiform. Involucral spikelets whorled, pedicelled; pedicelled spikelets lanceolate, pedicels long, ciliate; hermaphrodite spikelets narrowly lanceolate. Grains oblong, dorsally compressed.

*Fls. & Frts.* : August–December.

*Illus.* : Mahesh. Illus. Fl. Delhi f. 229. 1966; Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: tt. 794 & 795. 1988.

*Distrib.* : Common in all districts.

*I. prostratum* (L.) Anderss. in Nov. Act. Soc. Sci. Upsal. 3, 2: 251. 1856; Bor, Grass. Ind. 188. 1960. *Andropogon prostratus* L. Mant. 304. 1771. *Iseilema wightii* Anderss. *op.cit.*; Hook. f. Fl. Brit. India 7: 218. 1896; Cooke, Fl. Pres. Bombay 3: 516. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 113. 1935. 'Achigrass', 'Sona'.

Herbs, perennial. Culms procumbent–ascending, rooting at base, 20–50 cm tall, nodes bearded. Leaves 8–30 x 0.3–0.5 cm, linear. Panicles compound, 10–20 cm long, spreading. Involucral spikelets oblong-lanceolate, 0.3–0.4 cm long; hermaphrodite spikelets 0.3–0.4 cm long; lower glume acute, obscurely 4-nerved; upper glume mucronate, obtusely keeled on back.

*Fls. & Frts.* : October–January.

*Illus.* : Patunkar, Grass. Marathw. 82, f. 23. 1980.

*Distrib.* : Ahmednagar; Aurangabad; Beed; Bhandara; Bombay; Chandrapur; Dhule; Jalgaon; Kolhapur; Nagpur; Nanded; Pune; Sangli; Satara (Blatt. & McC. *op.cit.*).

## JANSENELLA Bor

**Jansenella griffithiana** (C. Muell.) Bor in Kew Bull. 1955: 98. 1955 & Grass. Ind. 426. 1960. *Danthonia griffithiana* C. Muell. in Bor. Zeit. 14: 347. 1856. *Arundinella avenacea* Munro ex Thw. Enum. Pl. Zeyl. 362. 1864; Hook. f. Fl. Brit. India 7: 69. 1896; Cooke, Fl. Pres. Bombay 3: 520. 1958 (Repr.ed.); Blatt. & McC. Bombay Grass. 191. 1935.

Herbs, slender, erect, 15 cm high, rooting at lower nodes. Leaves 2.5–4.5 x 0.4–0.5 cm, ovate-lanceolate; ligules linear. Inflorescence a compact panicle of crowded spikelets in pairs, one short and the other long pedicelled. Spikelets 0.5–0.7 cm long, awned, aristate.

Fls. & Frts. : September–November.

Illus. : Blatt. & McC. *op.cit.* t. 124; Bor, *op.cit.*

Distrib. : Ahmednagar; Kolhapur; Nasik; Pune; Raigad; Ratnagiri; Satara; Sindhudurg.

LEERSIA Soland. ex Swartz (*nom. cons.*)

**Leersia hexandra** Swartz, Prodr. Veg. Ind. Occ. 21. 1788; Hook. f. Fl. Brit. India 7: 94. 1896; Bor, Grass. Ind. 599. 1960; Salunkhe & Yadav in Indian Bot. Repr. 8: 143. (1989) 1990.

Perennials; culms rooting in mud, with floating branches and sending up erect or ascending slender leafy branches 60–90 cm high. Leaves linear, tapering to a fine point; ligule short, obliquely truncate or 2-lobed, membranous. Panicles 5.0–7.5 cm long, oblong, laxly branched. Spikelets pale-green.

Fls. & Frts. : Throughout the year.

Illus. : Subr. Aquat. Ang. 174, f. 62. 1962; Gilliland, Fl. Malaya 3: 98, f. 16. 1971; W.D. Clayton in Hepper, Fl. W. Trop. Afr. 3(2): 368, f. 422. 1972; Matthew, Illus. Fl. Tamilnadu Carnatic 2: tt. 888 & 889. 1982.

Distrib. : Rare. In rice fields and in shallow water tanks. Kolhapur (Salunkhe & Yadav, *op. cit.*); Nagpur; Sindhudurg (S.M. Almeida, Fl. Savantwadi 2: 140. 1990).

## LEPTOCHLOA P. Beauv.

1. Florets 2; racemes slender, 2.5–6.0 cm long
1. Florets 3–6; racemes thick, 5–10 cm long

... *L. panicea*  
... *L. chinensis*

**Leptochloa** C. f. Fl. Brit. India 7: Bor, Grass. Ind. 51

Herbs, annua  
Sheaths compres  
Leaves 10–35 x 0.  
oblong or ovate-  
long, 3–7-flowered  
brown.

Fls. & Frts.

Illus. : Patu  
Fl. Tamilnadu Ca

Distrib. : R  
fields. Bombay C

**L. panicea**  
Grass. Ind. 51  
*Leptochloa filif*  
Beauv. 1812. L.

Herbaceou  
ascending. Le  
acuminate. Spi  
panicles up to

Fls. & Fr

Illus. : M  
Illus. Fl. Tami

Distrib. :

**Lolium**  
364. 1896; Bo  
143: 377. 198  
1993.

Annua  
geniculate  
auricles at b  
long, 2–10 (

Distrib

**Leptochloa chinensis** (L.) Nees in Syll. Ratisb. 1: 4. 1824; Hook. f. Fl. Brit. India 7: 299. 1896; Blatt. & McC. Bombay Grass. 244. 1935; Bor, Grass. Ind. 516. 1960. *Poa chinensis* L. Sp. Pl. 69. 1753.

Herbs, annual; culms tufted, 40–90 cm tall, rooting at lower nodes. Sheaths compressed, 8–12 cm long, ligule membranous, lacerate. Leaves 10–35 x 0.2–0.4 cm, linear, scaberulous, acute at apex. Panicles oblong or ovate-oblong, 25–40 cm long. Spikelets linear, 0.4–0.6 cm long, 3–7-flowered. Grains oblong-obovoid, c 0.1 cm long, compressed, brown.

Fls. & Frts. : September–February.

Illus. : Patunkar, Grass. Marathw. 256, f. 78. 1980; Matthew, Illus. Fl. Tamilnadu Carnatic 2: tt. 890 & 891. 1982.

Distrib. : Rare, along margins of ponds, in wet and harvested rice fields. Bombay (Blatt. & McC. *op. cit.*); Nanded; Parbhani.

**L. panicea** (Retz.) Ohwi in Bot. Mag. Tokyo 55: 311. 1941; Bor, Grass. Ind. 517. 1960. *Poa panicea* Retz. Obs. Bot. 3: 11. 1783. *Leptochloa filiformis sensu* Hook. f. Fl. Brit. India 7: 298. 1896 *non* P. Beauv. 1812. *L. contracta* Blatt. & McC. Bombay Grass. 243. 1934.

Herbaceous grasses; culms 20–30 cm tall, tufted, geniculately ascending. Leaves 5–20 x 0.8–1.0 cm, linear-lanceolate, finely acuminate. Spikelets c 0.15 cm long, linear, 3–5-flowered in interrupted panicles up to 10 cm long. Caryopsis c 0.05 cm long, broadly ellipsoid.

Fls. & Frts. : August–December.

Illus. : Mahesh. Illus. Fl. Delhi f. 269. 1966; Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 797. 1988.

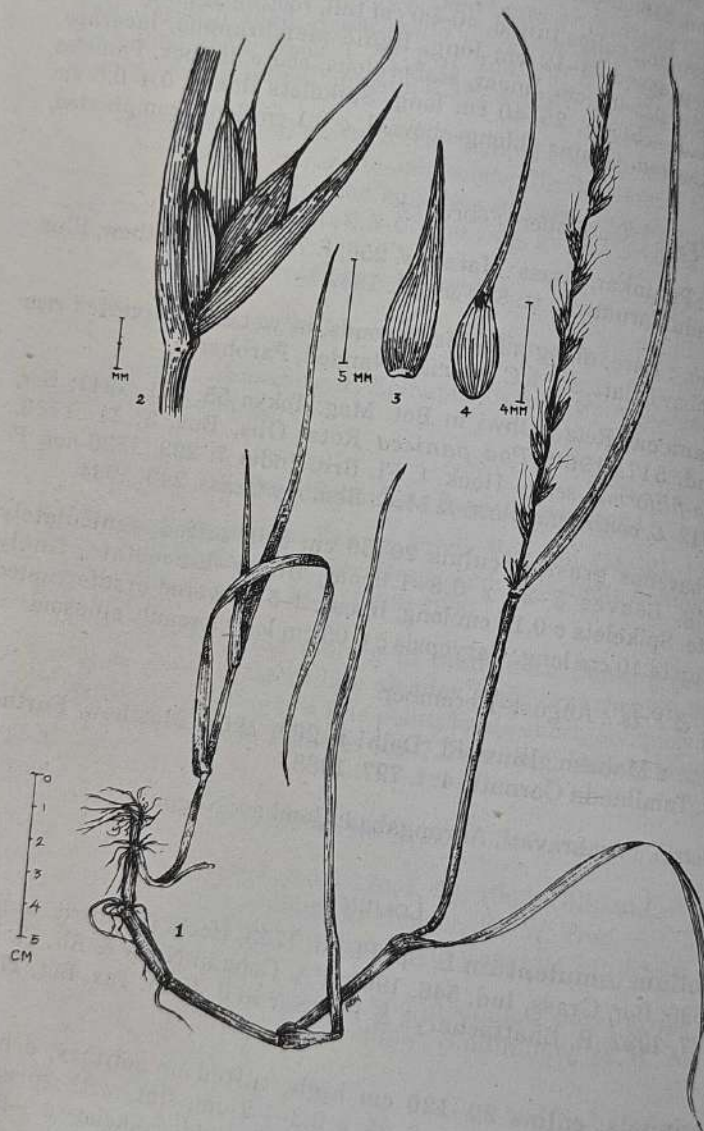
Distrib. : Amaravati; Aurangabad; Bombay; Nagpur.

#### LOLIUM L.

**Lolium temulentum** L. Sp. Pl. 83. 1753; Hook. f. Fl. Brit. India 7: 364. 1896; Bor, Grass. Ind. 546. 1960; T.A. Cope in Nasir & Ali, Fl. Pak. 143: 377. 1982; B. Bhattacharya & P.R. Sur in J. Econ. Tax. Bot. 17: 37. 1993.

Annuals; culms 20–120 cm high, tufted or solitary, erect or geniculate at base. Leaves 6–25 x 0.3–1.2 cm, flat, with spreading auricles at base. Spikes erect, 5–40 cm long, rigid. Spikelets 0.8–2.8 cm long, 2–10 (–15) flowered.

Distrib. : Nanded; Pune.



*Lolium temulentum* L.  
1. Habit 2. Spikelet 3. Upper glume 4. Lemma

*Lophop*  
Pflanzenf. 2(2):  
Pres. Bombay  
28.1935; Bor,  
Ind. 1: 261. 18

Herbs, p  
long, linear.  
yellowish-bro  
linear-oblong.

Fls. & F

Illus. : F  
24. 1980; Mat

Distrib.  
Kolhapur; Ne  
Sholapur; Th

1. Clusters of  
1. Clusters of

Melan  
38: 214. 185  
Br. ex Frese  
var. *plumos*  
553. 1958 (F

Annua  
ascending.  
sparse whi  
rhachis, 1.5

Distrib

M. ja  
1851; Bor,  
India 7: 28  
Blatt. & M

Herb  
Leaves 3-  
0.5-0.8 cm

**Lophopogon tridentatus** (Roxb.) Hack. in Engl. & Prantl, Pflanzent. 2(2): 26. 1887; Hook. f. Fl. Brit. India 7: 149. 1896; Cooke, Fl. Pres. Bombay 3: 484. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 28. 1935; Bor, Grass. Ind. 190. 1960. *Andropogon tridentatus* Roxb. Fl. Ind. 1: 261. 1820.

Herbs, perennial, 15–30 cm high, erect, tufted. Leaves 5–7 cm long, linear. Spikes solitary, 1.5–2.0 cm long, compressed, drying yellowish-brown. Spikelets 0.3–0.5 cm long, densely imbricate. Grains linear-oblong.

Fls. & Frts. : August–December.

Illus. : Blatt. & McC. *op.cit.* t. 9; Patunkar, Grass. Marathw. 84, f. 24. 1980; Matthew, Illus. Fl. Tamilnadu Carnatic 2: tt. 892 & 893. 1982.

Distrib. : Ahmednagar; Akola; Aurangabad; Buldhana; Jalgaon; Kolhapur; Nanded; Nasik; Osmanabad; Parbhani; Pune; Sangli; Satara; Sholapur; Thane.

MELANOCENCHRIS Nees

1. Clusters of spikelets including awns, c 0.8 cm long ..... *M. jacquemontii*
1. Clusters of spikelets including the awns, 1.0 cm or more long ... *M. abyssinica*

**Melanocenchris abyssinica** (R.Br. ex Fresen.) Hochst. in Flora 38: 214. 1855 in Obs.; Bor, Grass. Ind. 473. 1960. *Eutriana abyssinica* R. Br. ex Fresen. in Mus. Sencken. 2: 142. 1837. *Gracilea royleana* Hook. f. var. *plumosa* Hook. f. Fl. India 7: 284. 1896; Cooke, Fl. Pres. Bombay 3: 553. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 249. 1935.

Annuals; culms 10–25 cm high, fasciculate or geniculately ascending. Leaves 1.5–5.0 x 0.12–0.25 cm, scaberulous above and with sparse whitish tubercle-based hairs on margins. Heads 3–5, on a rhachis, 1.5–3.0 cm long.

Distrib. : Bombay (Bor, *op.cit.*).

**M. jacquemontii** Jaub. & Spach, Illustr. Pl. Orient. 4: 36, t. 325. 1851; Bor, Grass. Ind. 473. 1960. *Gracilea royleana* Hook. f. Fl. Brit. India 7: 284. 1896; Cooke, Fl. Pres. Bombay 3: 553. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 248. 1935.

Herbs, annual, 15–18 cm high, erect-diffuse, densely tufted. Leaves 3–6 cm long, narrowly linear. Spikes 2–4 cm long. Spikelets 0.5–0.8 cm long. Grains compressed, oblong-ellipsoid, brown.

*Fls. & Frts.* : August–December.

*Illus.* : Blatt. & McC. *op.cit.* t. 165; Patunkar, Grass. Marathw. 222, f. 67. 1980.

*Distrib.* : Common throughout in fertile soils of open grasslands.

#### MICROCHLOA R. Br.

**Microchloa indica** (L.f.) P. Beauv. Ess. Agrost. 20. 1812; Blatt. & McC. Bombay Grass. 248. 1935; Bor, Grass. Ind. 473. 1960. *Nardus indica* L.f. Suppl. 105. 1781. *Microchloa setacea* R. Br. Prodr. 208. 1810; Hook. f. Fl. Brit. India 7: 283. 1896; Cooke, Fl. Pres. Bombay 3: 553. 1958 (Repr. ed.).

Herbs, annual; culms tufted, slender, 8–15 cm tall. Leaves 1.0–2.5 x 0.08–0.12 cm, narrowly linear, crowded at base, subsetaceous. Spikes slender, curved. Spikelets sessile, 0.25–0.27 cm long, oblong-lanceolate; glumes lanceolate; lemmas hairy on nerves. Grains 0.1–0.12 cm long, oblong, smooth.

*Fls. & Frts.* : September–December.

*Illus.* : Blatt. & McC. *op.cit.* t. 164; Patunkar, Grass. Marathw. 224, f. 68. 1980; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 896. 1982.

*Distrib.* : Aurangabad; Beed; Chandrapur; Dhule; Kolhapur; Nagpur; Nanded; Parbhani; Sangli; Satara.

#### MNESITHEA Kunth

- |   |     |                      |
|---|-----|----------------------|
| 1. Sessile spikelets spherical  | ... | <i>M. granularis</i> |
| 1. Sessile spikelets not spherical in shape :   |     |                      |
| 2. Lower glume of sessile spikelets with a broad wing on each keel  | ... | <i>M. clarkei</i>    |
| 2. Sessile spikelets not winged on keels of lower glume, if winged at all, then only at apex and narrowly | ... | <i>M. laevis</i>     |

**Mnesithea clarkei** (Hack.) Koning & Sosef in Blumea 31: 290. 1986. *Rottboellia clarkei* Hack. in Oesterr. Bot. Zeitschr. 41: 8. 1891; Hook. f. Fl. Brit. India 7: 156. 1896; Cooke, Fl. Pres. Bombay 3: 472. 1958 (Repr. ed.). *Coelorachis clarkei* (Hack.) Blatt. & McC. in J. Bombay nat. Hist. Soc. 32: 33. 1927 & Bombay Grass. 41. 1935. *Manisuris clarkei* (Hack.) Bor ex Sant. in Rec. Bot. Surv. India 16(1): 357. 1953; Bor, Grass. Ind. 191. 1960; Jain in Bull. Bot. Surv. India 12: 10, f.l. (1970) 1972.

Herbs, 1.0  
7–18 x 0.5–1.2  
Racemes 1.5–2  
0.2–0.3 cm long

*Fls. & Frts.*

*Illus.* : Blatt

*Distrib.* :  
Pune; Raigad;

**M. gran**  
*Cenchrus gran*  
(L.) L.f. Nov. C  
Cooke, Fl. Pre  
Grass. 32. 19  
776. 1891; B  
Oesterr. Bot.  
*porifera* (Ha  
'*Dalura ghas*'

Herbs, s  
base, nodes  
sheaths hisp  
0.5–2.5 cm  
narrowly cre  
lanceolate.

*Fls. & Frts.*

*Illus.* :  
18. 1980; Ma

*Distrib.*  
grasslands a

**M. lae**  
197. 1960. I  
Roxb. Pl. Co

Herbs,  
above; node  
base, glabro  
10–20 cm l  
spikelets re

*Fls. & Frts.*

Herbs, 1.0–1.5 m high, erect; stems striate, hairy at nodes. Leaves 7–18 x 0.5–1.2 cm, linear-lanceolate, scabrous or more or less hairy. Racemes 1.5–3.0 cm long, subtended by spathes. Sessile spikelets 0.2–0.3 cm long; pedicelled spikelets imperfect.

Fls. & Frts. : September–November.

Illus. : Blatt. & McC. *op.cit.* t. 29; Jain, *op.cit.*

Distrib. : Amaravati; Bombay; Chandrapur; Kolhapur; Nasik; Pune; Raigad; Sindhudurg; Satara; Thane.

**M. granularis** (L.) Koning & Sosef in Blumea 31: 295. 1986. *Cenchrus granularis* L. Mant. 2, App. 575. 1771. *Manisuris granularis* (L.) L.f. Nov. Gram. Gen. 40. 1779; Hook. f. Fl. Brit. India 7: 159. 1896; Cooke, Fl. Pres. Bombay 3: 473. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 32. 1935. *Hackelochloa granularis* (L.) O. Ktze. Rev. Gen. Pl. 2: 776. 1891; Bor, Grass. Ind. 159. 1960. *Manisuris porifera* Hack. in Oesterr. Bot. Zeitschr. 41: 48. 1891; Hook. f. *op.cit.* 160. *Hackelochloa porifera* (Hack.) Rhind, Grass. Burma 77. 1945; Bor, *op.cit.* 160. 'Dalura ghas', 'Kanjani', 'Kangri'.

Herbs, annual, erect, c 30 cm high; culms much branched from base, nodes hairy. Leaves 3.5–8.5 x 0.3–0.7 cm, linear-lanceolate; sheaths hispid; ligules short, membranous, densely ciliate. Racemes 0.5–2.5 cm long. Sessile spikelets 0.1–0.2 cm long, upper glumes narrowly crested at apex; pedicelled spikelets c 0.2 cm long, ovate-lanceolate.

Fls. & Frts. : August–October.

Illus. : Blatt. & McC. *op.cit.* t. 22; Patunkar, Grass. Marathw. 63, f. 18. 1980; Matthew, Illus. Fl. Tamilnadu Carnatic 2: tt. 874 & 875. 1982.

Distrib. : Common throughout on gravelley hill slopes, in open grasslands and in wet places.

**M. laevis** (Retz.) Kunth, Rev. Gram. 1: 154. 1829; Bor, Grass. Ind. 197. 1960. *Rottboellia laevis* Retz. Obs. Bot. 3: 11. 1783. *R. perforata* Roxb. Pl. Cor. 2: 43, t. 182. 1798; Hook. f. Fl. Brit. India 7: 158. 1896.

Herbs, annual; stem 0.6–1.2 m high, slender, simple or branched above; nodes few. Leaves 17–75 x 0.4 cm, flat, linear from a narrow base, glabrous or base hairy, margins scaberulous; ligule short. Spikes 10–20 cm long, shortly exserted. Spikelets 0.4–0.5 cm long; pedicelled spikelets reduced to a minute glume. Grains 0.15–0.2 cm long.

Fls. & Frts. : September–October.

*Illus.* : Matthew, *Illus. Fl. Tamilnadu Carnatic* 2: tt. 897 & 898, 1982.

*Distrib.* : Rare in moist soils. Chandrapur.

*Notes* : Though reportedly common in many States of India, it has been reported from Maharashtra proper for the first time by Malhotra and Moorthy in *J. Bombay nat. Hist. Soc.* 70: 600. 1974.

#### MUHLENBERGIA Schreb.

**Muhlenbergia himalayensis** Hack. ex Hook. f. *Fl. Brit. India* 7: 259. 1896; Bor, *Grass. Ind.* 401. 1960; U. R. Deshpande & N. P. Singh, *Grass. Maharashta* 79. 1986.

Perennials; stems 30–45 cm long, slender, decumbent or ascending, branched. Leaves narrow, flaccid; ligule oblong. Panicle 7.5–15.0 cm long, elongate, much fastigiately branched, interrupted. Spikelets 0.3–0.4 cm long, bright green, glistening.

*Distrib.* : Pune (Bor, *op.cit.*):

#### OCHTHOCHLOA Edgew.

**Ochthochloa compressa** (Forssk.) Hilu in *Kew Bull.* 36: 559. 1981. *Panicum compressum* Forssk. *Fl. Aegypt.-Arab.* 18. 1775. *Eleusine flagellifera* Nees in *Linnaea* 16: 220. 1842; Hook. f. *Fl. Brit. India* 7: 294. 1896; Cooke, *Fl. Pres. Bombay* 3: 560. 1958 (Repr. ed.); Blatt. & McC. *Bombay Grass.* 261. 1935. *E. compressa* (Forssk.) Aschers. & Schweinf. ex C. Chr. in *Dansk. Bot. Arkiv.* 4, no. 3, 12. 1922; Bor, *Grass. Ind.* 492. 1960.

Perennials, creeping and rooting at nodes. Leaves 1.2–3.7 x 0.15–0.3 cm, linear-lanceolate, acuminate, rigid; ligule a hairy line. Spikes 3–6, digitate, 2.0–3.7 x 0.4–0.8 cm. Spikelets imbricate, 4–6-flowered, 0.3–0.8 cm long.

*Fls. & Frts.* : July–November.

*Illus.* : Blatt. & McC. *op.cit.* t. 175.

*Distrib.* : Khandesh & Pune (Cooke, *op.cit.* & Blatt. & McC. *op.cit.*):

#### OPHIUROS Gaertn. f.

1. Annuals
1. Perennials

... *O. bombaiensis*  
... *O. exaltatus*

**Ophiuros**  
*Grass. Ind.* 198.

Annuals;  
acuminate, qu  
inflorescence. S

*Fls. & Frt*

*Distrib.* :

**O. exaltatus**  
*Ind.* 199. 196  
*corymbosus* G  
160. 1896; Co  
McC. *Bombay*

Herbs, 1  
Leaves 12.5–  
cm long, cor  
rhachis. Grai

*Fls. & F*

*Illus.* :  
25. 1980; Ma

*Distrib*

1. Awns red
1. Awns pale

**Oplis**  
169. 1812;  
3: 443. 195  
*Grass. Ind*  
'Kudak', 'Y

Herbs  
1.5–6.0 x  
Panicles  
ellipsoid-c

*Fls. c*

*Ophiuros bombaiensis* Bor in Kew Bull. 1951: 167. 1951 & Grass. Ind. 198. 1960.

Annuals; culms tufted, 25–40 cm long. Leaf blades linear, acuminate, quite glabrous, thin, smooth. Peduncle pilose below inflorescence. Spikelets 2.3–2.6 mm long, oblong-lanceolate, obtuse.

Fls. & Frts. : July–October.

Distrib. : Sindhudurg (Salunkhe, 1995).

*O. exaltatus* (L.) O. Ktze. Rev. Gen. Pl. 2: 780. 1891; Bor, Grass. Ind. 199. 1960. *Aegilops exaltata* L. Mant. 575. 1771. *Ophiuros corymbosus* Gaertn. f. Fruct. 3:4, t. 181. 1805; Hook. f. Fl. Brit. India 7: 160. 1896; Cooke, Fl. Pres. Bombay 3: 468. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 40. 1935. 'Hutia', 'Uphada'.

Herbs, perennial, erect, tufted, 1–2 m high; stems cylindrical. Leaves 12.5–13.0 x 0.8 cm, linear-lanceolate; ligules short. Spikes 3–8 cm long, corymbosely fasciculate. Spikelets c 0.3 cm long, sunken in rhachis. Grains oblong.

Fls. & Frts. : September–December.

Illus. : Blatt. & McC. *op.cit.* t. 28; Patunkar, Grass. Marathw. 86, f. 25. 1980; Matthew, Illus. Fl. Tamilnadu Carnatic 2: tt. 899 & 900. 1982.

Distrib. : Common in all districts.

#### OPLISMENUS P. Beauv.

- |   |     |                      |
|---|-----|----------------------|
| 1. Awns reddish, smooth, viscid, filiform, stiff    | ... | <i>O. compositus</i> |
| 1. Awns pale, barbellate, capillary, often flexuous | ... | <i>O. burmannii</i>  |

*Oplismenus burmannii* (Retz.) P. Beauv. Ess. Agrost. 54, 168, 169. 1812; Hook. f. Fl. Brit. India 7: 68. 1896; Cooke, Fl. Pres. Bombay 3: 443. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 154. 1935; Bor, Grass. Ind. 317. 1960. *Panicum burmannii* Retz. Obs. Bot. 3:10. 1783. 'Kudak', 'Yerwa'.

Herbs, slender; culms 10–70 cm long, diffusely branched. Leaves 1.5–6.0 x 0.5–1.0 cm, ovate or ovate-lanceolate; ligule a rim of hairs. Panicles 6–8 cm long. Spikelets c 0.3 cm long, lanceolate. Grains ellipsoid-oblong.

Fls. & Frts. : July–February.

*Illus.* : Blatt. & McC. *op.cit.* t. 97; Mahesh. *Illus. Fl. Delhi* f. 208. 1966; Patunkar, *Grass. Marathw.* 152, f. 45. 1980.

*Distrib.* : Common in all districts.

**O. compositus** (L.) P. Beauv. *Ess. Agrost.* 54, 168, 169. 1812; Hook. f. *Fl. Brit. India* 7: 66. 1896; Cooke, *Fl. Pres. Bombay* 3: 442. 1958 (Repr. ed.); Blatt. & McC. *Bombay Grass.* 152. 1935; Bor, *Grass. Ind.* 317. 1960. *Panicum compositum* L. Sp. Pl. 57. 1753. 'Shara', 'Turdia'.

Herbs, perennial, 30-40 cm high; culms slender, branched. Leaves 3-11 x 0.9-2.2 cm, ovate or ovate-lanceolate; sheaths ciliate; ligules shortly ciliate. Panicles 9-16 cm long. Spikelets 0.3-0.4 cm long, lanceolate.

*Fls. & Frts.* : August-December.

*Illus.* : Blatt. & McC. *op.cit.* t. 96; Mahesh. *Illus. Fl. Tamilnadu Carnatic* 2: tt. 901 & 902. 1982.

*Distrib.* : Ahmednagar; Amaravati; Bhandara; Bombay; Chandrapur; Dhule (Blatt. & McC. *op.cit.*); Kolhapur; Nagpur; Nasik; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

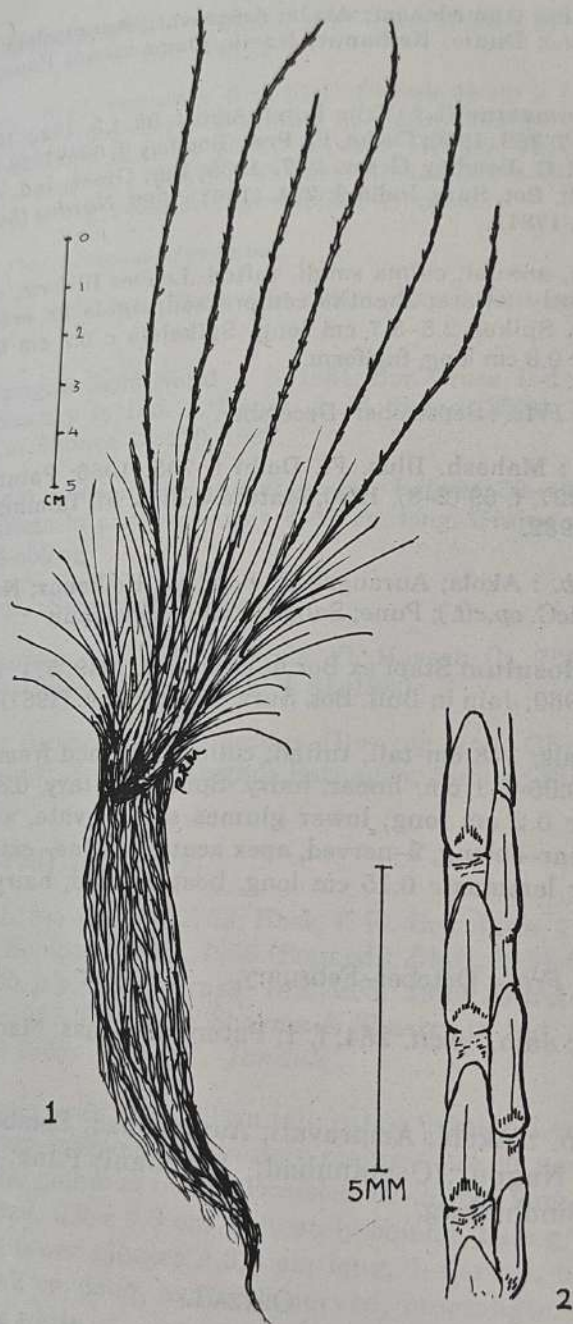
#### OROPETIUM Trin.

- |  |     |                         |
|--|-----|-------------------------|
| 1. Lemmas cleft at apex into 2 lobes, awned in cleft               | ... | <i>O. roxburghianum</i> |
| 1. Lemmas neither cleft nor awned :                                |     |                         |
| 2. Lemmas hirsute; spikes 1.5 cm long; spikelets 0.1-0.15 cm long  | ... | <i>O. villosulum</i>    |
| 2. Lemmas glabrous; spikes 2-5 cm long; spikelets 0.15-0.2 cm long | ... | <i>O. thomazum</i>      |

**Oropetium roxburghianum** (Steud.) S.M. Phillips in *Kew Bull.* 30: 469. 1975. *Lepturus roxburghianus* Steud. *Syn. Pl. Glum.* 1: 357. 1854; Hook. f. *Fl. Brit. India* 7: 365. 1896. *Tripogon roxburghianus* (Steud.) Bhide in *J. Proc. Asiat. Soc. Bengal* 1911 (N.S.) 7: 515. 1912; Blatt. & McC. *Bombay Grass.* 268. 1935; Bor, *Grass. Ind.* 524. 1960.

Herbs, 10-20 cm high, erect, tufted. Leaves filiform, 1.5-5.0 cm long. Spikes solitary, subterete, 5-10 cm long. Spikelets 0.2-0.3 cm long; callus bearded. Caryopsis c 0.1 cm long, oblong-ellipsoid, pointed at one end, terete, reddish-brown.

*Fls. & Frts.* : August-November.



*Oropetium roxburghianum* (Steud.) S. M. Phillips  
1. Habit 2. Raceme

*Distrib.* : Ahmednagar; Akola; Amaravati; Aurangabad; Bombay (Bor. *op.cit.*); Dhule; Kolhapur; Nasik; Osmanabad; Pune; Satara; Sholapur.

*O. thomaeum* (L.f.) Trin. Fund. Agrost. 98, t.3. 1822; Hook. f. Fl. Brit. India 7: 366. 1896; Cooke, Fl. Pres. Bombay 3: 568. 1958 (Repr. ed.). Blatt. & McC. Bombay Grass. 247. 1935; Bor, Grass. Ind. 474. 1960; Jain in Bull. Bot. Surv. India 9: 284. (1967) 1968. *Nardus thomaea* L. f. Suppl. 105. 1781.

Herbs, annual; culms small, tufted. Leaves filiform, up to 2 cm long, sparsely ciliate; sheaths compressed; ligule an erect lacerate membrane. Spikes 2.5–3.7 cm long. Spikelets c 0.2 cm long, acute. Caryopsis c 0.8 cm long, fusiform.

*Fls. & Frts.* : September–December.

*Illus.* : Mahesh. Illus. Fl. Delhi f. 245. 1966; Patunkar, Grass. Marathw. 227, f. 69 (2–8). 1980; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 903. 1982.

*Distrib.* : Akola; Aurangabad; Bombay; Kolhapur; Nagpur; Nasik (Blatt. & McC. *op.cit.*); Pune; Sangli; Satara; Sholapur.

*O. villosulum* Stapf ex Bor in Kew Bull. 1949: 571. 1950 & Grass. Ind. 474. 1960; Jain in Bull. Bot. Surv. India 9: 284. (1967) 1968.

Annuals, 3–8 cm tall, tufted; culms branched from base. Leaves 0.5–2.4 x 0.05–0.1 cm, linear, hairy. Spikes solitary, 0.8–1.5 cm long. Spikelets c 0.2 cm long; lower glumes scaly, ovate, awnless; upper glumes linear-oblong, 2-nerved, apex acute, hyaline, extended in lower half; upper lemmas c 0.15 cm long, boat-shaped, hairy at tip. Seeds horned.

*Fls. & Frts.* : October–February.

*Illus.* : Jain, *op.cit.* 284, f. 1; Patunkar, Grass. Marathw. 227, f. 69 (1). 1980.

*Distrib.* : Akola; Amaravati; Aurangabad; Bombay (Bor, *op.cit.*); Kolhapur; Nagpur; Osmanabad; Parbhani; Pune; Sangli; Satara; Sholapur; Sindhudurg.

#### ORYZA L.

1. Ligule of lower leaves up to 0.6 cm long
1. Ligule of lower leaves 1.5–4.5 cm long

... *O. latifolia*  
... *O. rufipogon*

*Oryza latifolia*  
7: 92. 1896; Bor.

Herbs, tufted, nearly smooth, short. Branches pedicels and base subimbricate, obovate.

*Fls. & Frts.*

*Distrib.* : Chandrapur.

*O. rufipogon*  
Sharma & Shrivastava  
Duistermaat in

Herbs, caespitose, ligulate. Spikelets long, ellipsoid-obovate.

*Fls. & Frts.*

*Illus.* : F. 1976; Patunkar

*Distrib.* : Kolhapur; Nasik; Thane; Yavat

#### CULTIVATION

*O. sativa*  
Cooke, Fl. Pres. Bombay 3: 568. 1958. Grass. 274. Blumea 32: 1. Breed. 25(2): 1.

Herbs, caespitose, x 0.6–1.2 cm long, and along margin laterally compressed. 3.5–10.0 cm long. upper glumes oblong, red colored.

*Fls. & Frts.*

*Oryza latifolia* Desv. in J. Bot. 1: 77. 1813; Hook. f. Fl. Brit. India 7: 92. 1896; Bor, Grass. Ind. 605. 1960.

Herbs, tufted, annual, c 6 m high. Leaves 30–60 x 1.2–3.7 cm, nearly smooth, many-nerved, shining beneath; sheaths long; ligule short. Branches of panicles 10–20 cm long slender, often whorled, pedicels and branches bearded at base. Spikelets 0.4–0.6 cm long, subimbricate, oblong, beaked. Grains oblong-ellipsoid.

Fls. & Frts. : August–November.

Distrib. : Introduced, rare in moist clayey and gritty soils. Chandrapur.

*O. rufipogon* Griff. Notul. 3: 5. 1851; Bor, Grass. Ind. 605. 1960; Sharma & Shastry in Ind. J. Genet. & Pl. Breed. 25(2): 157. 1965; Duistermaat in Blumea 32: 170. 1987.

Herbs, c 1 m high, rooting at nodes. Leaves 30–40 cm long, ligulate. Spikelets in panicles; awns 4–10 cm long. Grains 0.5–0.6 cm long, ellipsoid-oblong.

Fls. & Frts. : September–January.

Illus. : Ramam. in Sald. & Nicols. Fl. Hassan Dt. 702, f. 111 I. 1976; Patunkar, Grass. Marathw. 266, f. 81. 1980.

Distrib. : Aurangabad; Bombay (Bor, *op.cit.*); Chandrapur; Kolhapur; Nagpur; Nanded; Raigad; Ratnagiri; Satara; Sindhudurg; Thane; Yavatmal.

#### CULTIVATED SPECIES :

*O. sativa* L. Sp. Pl. 333. 1753; Hook. f. Fl. Brit. India 7: 92. 1896; Cooke, Fl. Pres. Bombay 3: 565. 1958 (Repr.ed.); Blatt. & McC. Bombay Grass. 274. 1935 *p.p.*; Bor, Grass. Ind. 605. 1960; Duistermaat in Blumea 32: 174. 1987. *O. nivara* Sharma & Shastry in Ind. J. Gen. Pl. Breed. 25(2): 161. 1965. 'Deobhat', 'Tandule'.

Herbs, annuals, erect, 60–100 cm tall; culms fistular. Leaves 10–50 x 0.6–1.2 cm, linear-lanceolate, minutely scaberulous on nerves above and along margins, glabrous below. Panicles 10–20 cm long. Spikelets laterally compressed, 0.8 x 0.3 cm, cuneately oblong, pale green, awns 3.5–10.0 cm long; lower glumes c 0.2 cm long, 1-nerved, mucronate, upper glumes c 0.2 cm long, ovate, 1-nerved, mucronate. Caryopsis oblong, red or dirty white.

Fls. & Frts. : August–November.

*Illus.* : Blatt. & McC. *op.cit.* t. 187.

*Distrib.* : Cultivated all over India. Ahmednagar; Amaravati; Aurangabad; Bombay; Chandrapur; Kolhapur; Nagpur; Nasik; Osmanabad; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

# PANICUM L.

- |  |     |                       |
|--|-----|-----------------------|
| 1. Lemmas of upper floret finely transversely rugose; nerves of upper glume and lower lemma obscure  | ... | <i>P. maximum</i>     |
| 1. Lemma of upper floret quite smooth; nerves of upper glume and lower lemma definite, conspicuous : | ... | <i>P. walense</i>     |
| 2. Lower glume up to 0.15 cm long  | ... | <i>P. notatum</i>     |
| 2. Lower glume 0.175-0.5 cm long :   | ... | <i>P. johari</i>      |
| 3. Lower glume orbicular, rounded or truncate :  | ... | <i>P. paludosum</i>   |
| 4. Lower glume one-half to three-quarters the length of spikelet or more                             | ... | <i>P. repens</i>      |
| 4. Lower glume one-quarter to half the length of spikelet :  | ... | <i>P. sumatrense</i>  |
| 5. Spikelets narrowly lanceolate to lanceolate-oblong :  | ... | <i>P. deccanense</i>  |
| 6. Panicles of slender racemose spikes   | ... | <i>P. psilopodium</i> |
| 6. Panicles not as above :   | ... | <i>P. miliaceum</i>   |
| 7. Leaf blades broad, flat; culms spongy, floating   | ... | <i>P. gardneri</i>    |
| 7. Leaf blades narrow, often involute; culms tough, rhizomatous                                      | ... | <i>P. hippothrix</i>  |
| 5. Spikelets oblong, ovoid-oblong to ellipsoid :   | ... |                       |
| 8. Panicles contracted; lower glume orbicular  | ... |                       |
| 8. Panicles effuse; lower glume ovate :  | ... |                       |
| 9. Rhizome creeping with bladeless shoots; spikelets straw coloured, persistent                      | ... |                       |
| 9. Rhizome absent; spikelets green or greenish-purple, deciduous                                     | ... |                       |
| 3. Lower glume acute, acuminate or cuspidate :   | ... |                       |
| 10. Spikelets 0.4-0.6 cm long :  | ... |                       |
| 11. Leaf-sheaths hairy; spikelets persistent   | ... |                       |
| 11. Leaf-sheaths glabrous; spikelets deciduous :   | ... |                       |
| 12. Glumes silvery hyaline on margins  | ... |                       |
| 12. Glumes not as above  | ... |                       |

10. Spik  
13.

13.

Pan  
India 7:  
Blatt. &  
'Git', 'Ser

Her  
Panicles  
glume ha  
nerved, r

Fls.

Illu

Dis  
Sindhud

P. :  
1851; B  
6: 207. 1

He  
hirsute,  
and ped  
solitary,

Fls.

Ill

Di

10. Spikelets 0.15–0.35 cm long :
13. Plants rhizomatous or with creeping rootstock :
14. Culms greenish; glumes with broad membranous margins ... *P. antidotale*
14. Culms purplish; margins of glumes not membranous ... *P. phoiniclados*
13. Plants without rhizomes or creeping rootstock :
15. Lower glume cuspidate-acuminate ... *P. trypheron*
15. Lower glume ovate, acute, not cuspidate-acuminate :
16. Lower glume half to two-thirds as long as spikelet ... *P. atosanguineum*
16. Lower glume one-fourth to one-third as long as spikelet ... *P. paianum*

***Panicum antidotale*** Retz. Obs. Bot. 4: 17. 1786; Hook. f. Fl. Brit. India 7: 52. 1896; Cooke, Fl. Pres. Bombay 3: 453. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 163. 1935; Bor, Grass. Ind. 322. 1960. 'Git', 'Sera'.

Herbs; culms 1–2 m tall, woody, smooth; rootstocks creeping. Panicles 15–22 cm long, pyramidal. Spikelets 0.3 cm long, ovoid; lower glume half as long as upper glume, broadly ovate, upper glume 7–9-nerved, membranous; lemmas coriaceous.

Fls. & Frts. : September–December.

Illus. : Blatt. & McC. *op.cit.* t. 104.

Distrib. : Amaravati; Dhule; Kolhapur; Pune; Ratnagiri; Satara; Sindhudurg; Thane.

***P. atosanguineum*** Hochst. ex A. Rich. Tent. Fl. Abyss. 2: 375. 1851; Bor, Grass. Ind. 322. 1960. *P. hydaspicum* Edgew. in J. Linn. Soc. 6: 207. 1862; Hook. f. Fl. Brit. India 7: 48. 1896.

Herbs, tufted, annual, 10–30 cm tall. Leaves linear-lanceolate, hirsute, base narrow; ligule a row of hairs. Panicles effuse; branches and pedicels filiform. Spikelets equalling or shorter than their pedicels, solitary, ovate, acute, nerves prominent.

Fls. & Frts. : October–December.

Illus. : Bor, *op.cit.* 323, f. 36.

Distrib. : Excellent fodder for cattle. Chandrapur.

**P. deccanense** Naik & Patunkar in Reinwardtia 9: 405, f. 2, 1960.  
Patunkar, Grass. Marathw. 154, f. 46. 1980.

Decumbent or erect, perennials; culms 25–50 cm long. Sheaths glabrous or hairy; ligule lacerate, c 0.1 cm long. Leaves 3–15 x 0.8–0.9 cm, flat, acute or acuminate, glabrous or hairy on both surfaces. Panicles 7–25 cm long, effuse. Spikelets ovate-acuminate, 0.25–0.3 cm long, green or purplish.

Fls. : September.

Illus. : Naik & Patunkar, *op.cit.*; Patunkar, *op.cit.*

Distrib. : Rare in open grasslands. Nanded.

**P. gardneri** Thw. Enum. Pl. Zeyl. 359. 1864; Bor, Grass. Ind. 326. 1960; S.M. Almeida, Fl. Savantwadi 2: 142. 1990. *Isachne gardneri* (Thw.) Bth. in Bth. & Hook. f. Gen. Pl. 3: 1100. 1883; Hook. f. Fl. Brit. India 7: 26. 1896.

Slender tall grasses; culms 2.0–2.5 cm long, smooth. Leaves lanceolate, acuminate at apex, broadly cordate at base with 3–4 pairs of main nerves. Panicles with widely spreading, sparingly divided branches.

Fls. & Frts. : August–November.

Distrib. : Rare along edges of forest in shady places. Sindhudurg (S.M. Almeida, *op. cit.*).

**P. hippothrix** K. Schum. in Engl. Pflanzenw. Ost.-Afr. C. 103. 1895; Bor, Grass. Ind. 326. 1960. *P. obscurans* (Woodr.) Stapf in J. Bombay nat. Hist. Soc. 13: 434. 1901; Cooke, Fl. Pres. Bombay 3: 452. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 157. 1935. 'Tan-sawa'.

Annuals, 30–60 cm high, tufted, erect or geniculate. Leaves 7–20 x 0.8–1.4 cm, lanceolate, acute; ligule a tuft of hairs. Panicles 20–40 x 15–30 cm, lax. Spikelets solitary, 0.4–0.5 cm long, narrowly ovoid, acuminate.

Fls. & Frts. : October–December.

Illus. : Blatt. & McC. *op.cit.* t. 99.

Distrib. : Osmanabad; Pune; Satara; Sholapur (Cooke, *op.cit.*); Thane.

**P. johnii** S.M. Almeida in J. Bombay nat. Hist. Soc. 83: 184, t. 2, f. 3. 1986.

Herbs, c 90 cm roots; culms stout, linear, c 30 cm long hairy. Inflorescence 0.2–0.3 x 0.07–0.1 at maturity. Caryo

Fls. & Frts. :

Illus. : S.M.

Distrib. : Ra

**P. maximu** 76. 1786; Hook. f. 455. 1958 (Repr. Grass. Ind. 327.

Densely tu panicle up to 50 0.3–0.35 cm long

Fls. & Frts

Illus. : Bla Fl. Malaya 3: 1 3(2): 430, f. 440

Distrib. : Chandrapur; Sangli; Satara

**P. miliac** 1896; Cooke, Bombay Gras 'Varai'.

Annuals Panicles narr ovoid-lanceo white, ellipso

Fls. & F

Illus. : Tamilnadu C

Distrib Parbhani; P

Herbs, c 90 cm tall, erect, tufted, annual with a number of fibrous roots; culms stout, striate with prominent nodes and internodes. Leaves linear, c 30 cm long with prominent mid-vein, narrowing to apex; ligule hairy. Inflorescence of terminal, slender, racemose spikes. Spikelets 0.2–0.3 x 0.07–0.1 cm, acute at apex, solitary, articulate, falling entirely at maturity. Caryopsis oblong, compressed with persistent style bases.

*Fls. & Frts.* : September–October.

*Illus.* : S.M. Almeida, *op.cit.*

*Distrib.* : Rare in rice fields. Sindhudurg.

**P. maximum** Jacq. Ic. Pl. Rar. 1:2, t. 13. 1781–86 & Coll. Bot. 1: 76. 1786; Hook. f. Fl. Brit. India 7: 49. 1896; Cooke, Fl. Pres. Bombay 3: 455. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 161. 1935; Bor, Grass. Ind. 327. 1960.

Densely tufted perennials, c 3 m high. Inflorescence an open panicle up to 50 cm long, the lower branches usually whorled. Spikelets 0.3–0.35 cm long, oblong; lower glume obtuse.

*Fls. & Frts.* : August–November.

*Illus.* : Blatt. & McC. *op.cit.* t. 103; Bor, *op.cit.* 328, f. 37; Gilliland, Fl. Malaya 3: 133, f. 24. 1971; W.D. Clayton in Hepper, Fl. W. Trop. Afr. 3(2): 430, f. 440. 1972.

*Distrib.* : Cultivated as a fodder crop. Ahmednagar; Aurangabad; Chandrapur; Dhule; Kolhapur; Nasik; Parbhani; Pune; Ratnagiri; Sangli; Satara; Sindhudurg; Thane.

**P. miliaceum** L. Sp. Pl. 58. 1753; Hook. f. Fl. Brit. India 7: 45. 1896; Cooke, Fl. Pres. Bombay 3: 456. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 159. 1935; Bor, Grass. Ind. 327. 1960. 'Ghoti-sava', 'Varai'.

Annuals, tufted, c 50 cm high. Leaves 5–15 x 0.5–1.0 cm, linear. Panicles narrowly oblong or pyramidal. Spikelets c 0.4 cm long, ovoid or ovoid-lanceolate, acute or shortly acuminate. Grains c 0.25 cm long, white, ellipsoid to oblong.

*Fls. & Frts.* : October–December.

*Illus.* : Blatt. & McC. *op.cit.* t. 100; Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 794. 1988.

*Distrib.* : Akola; Beed; Bombay; Kolhapur; Nasik; Osmanabad; Parbhani; Pune; Raigad; Ratnagiri; Sangli; Satara; Sindhudurg; Thane.

**P. notatum** Retz. Obs. Bot. 4: 18. 1786; Bor, Grass. Ind. 701. 1900.  
*P. montanum* Roxb. Fl. Ind. 1: 315. 1820; Hook. f. Fl. Brit. India 7: 63.  
 1896; Blatt. & McC. Bombay Grass. 164. 1935. 'Jokarband'.

Herbs, perennial, erect c 2 m high. Leaves 10.0–15.5 x 1.2–2.2 cm,  
 linear-oblong or lanceolate, sparsely hairy. Panicles c 20 cm long,  
 spreading. Spikelets c 0.2 cm long, ellipsoid. Grains compressed,  
 enclosed by hardened lemma and palea.

*Fls. & Frts.* : September–November.

*Illus.* : Blatt. & McC. *op.cit.* t. 105; Matthew, *Illus. Fl. Tamilnadu*  
 Carnatic 4: t. 801. 1988.

*Distrib.* : Bhandara; Bombay; Chandrapur; Nasik; Pune; Raigad;  
 Ratnagiri; Sindhudurg; Thane.

**P. paianum** Naik & Patunkar in Reinwardtia 9: 407, f. 3. 1980;  
 Patunkar, Grass. Marathw. 157, f. 47. 1980.

1. Culms and leaves with bulbous based hairs;  
 spikelets deciduous

1. Bulbous hairs absent; spikelets not deciduous

**var. paianum.**

... var. *paianum*  
 ... var. *minor*

Erect or procumbent annual; culms 15–50 cm long, rooting at  
 lower nodes, pubescent with bulbous based hairs; sheaths glabrous or  
 pubescent; ligule a ciliate ring c 0.1 cm long. Leaves linear-lanceolate,  
 3–10 x 0.5–0.9 cm, acute, glabrous or pubescent. Panicles 6–15 x 6–10  
 cm, effuse. Spikelets lanceolate, 0.27–0.3 x 0.1–0.12 cm, acute.

*Fls.* : October.

*Illus.* : Naik & Patunkar, *op. cit.*; Patunkar, *op.cit.*

*Distrib.* : Rare along gullies in open grasslands. Nanded.

**var. minor** Naik & Patunkar in Reinwardtia 9: 409. 1980;  
 Patunkar, Grass. Marathw. 158, f. 48. 1980.

Easily distinguished from var. *paianum* by its low stature, smaller  
 spikelets and absence of hairs.

*Fls.* : October.

*Illus.* : Patunkar, *op.cit.*

*Distrib.* : Rare in open grasslands. Nanded.

**P. paludosum** Roxb. Fl. Ind. 1: 310. 1820; Blatt. & McC. Bombay

Grass. 162. 19  
 f. Fl. Brit. Ind  
*paludosum* S  
 Bombay 3: 45.

Annuals  
 nodes, 50–10  
 Panicles 12–1  
 long, cup-lik  
 7–9-nerved. (

*Fls. & F*

*Illus.* : 1  
 803. 1988.

*Distrib.*  
*op.cit.*; Kol  
 Raigad; Ratn

**P. pho**  
 1980; Patun

Tufted  
 90–120 cm  
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 8–15 cm lo  
 cm long.

*Fls. &*

*Illus.*

*Distri*  
 Amaravati

**P. ps**  
 India 7: 46  
 Ind. 329.  
*psilopodiu*  
*sumatrens*  
 Bota Appl

Herb  
 Leaves 6.  
 Spikelets  
 enclosed b

Grass. 162. 1935; Bor, Grass. Ind. 329. 1960. *P. proliferum sensu* Hook. f. Fl. Brit. India 7: 50. 1896 non Lam. 1797. *P. proliferum* Hook. f. var. *paludosum* Stapf in Dyer, Fl. Cap. 7: 407. 1899; Cooke, Fl. Pres. Bombay 3: 454. 1958 (Repr. ed.). 'Borati'.

Annuals or perennials, decumbent-ascending, rooting at basal nodes, 50-100 cm tall. Leaves 12-21 x 0.6-0.8 cm, linear, glabrous. Panicles 12-18 cm long. Spikelets c 0.4 cm long; lower glumes c 0.1 cm long, cup-like, 3-nerved, upper glumes 0.35-0.4 cm long, lanceolate, 7-9-nerved. Grains 0.25-0.3 cm long, ellipsoid-oblong.

Fls. & Frts. : August-February.

Illus. : Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: tt. 802 & 803. 1988.

Distrib. : Ahmednagar; Aurangabad; Beed; Bombay (Blatt. & McC. op.cit.); Kolhapur; Nanded; Nagpur; Osmanabad; Parbhani; Pune; Raigad; Ratnagiri; Satara; Sindhudurg.

**P. phoinicladus** Naik & Patunkar in Reinwardtia 9: 403, f. 1. 1980; Patunkar, Grass. Marathw. 159, f. 49. 1980.

Tufted perennial grasses with short creeping rhizome; culms 90-120 cm tall, rooting at lower nodes. Sheaths striated; ligule a narrow, coriaceous, hairy ring c 0.1 cm long. Leaves 10-25 x 0.3-0.5 cm, linear-lanceolate, rigid, tapering to a fine point. Panicles pyramidal, 8-15 cm long, sparingly branched. Spikelets ovoid-lanceolate, 0.25-0.3 cm long.

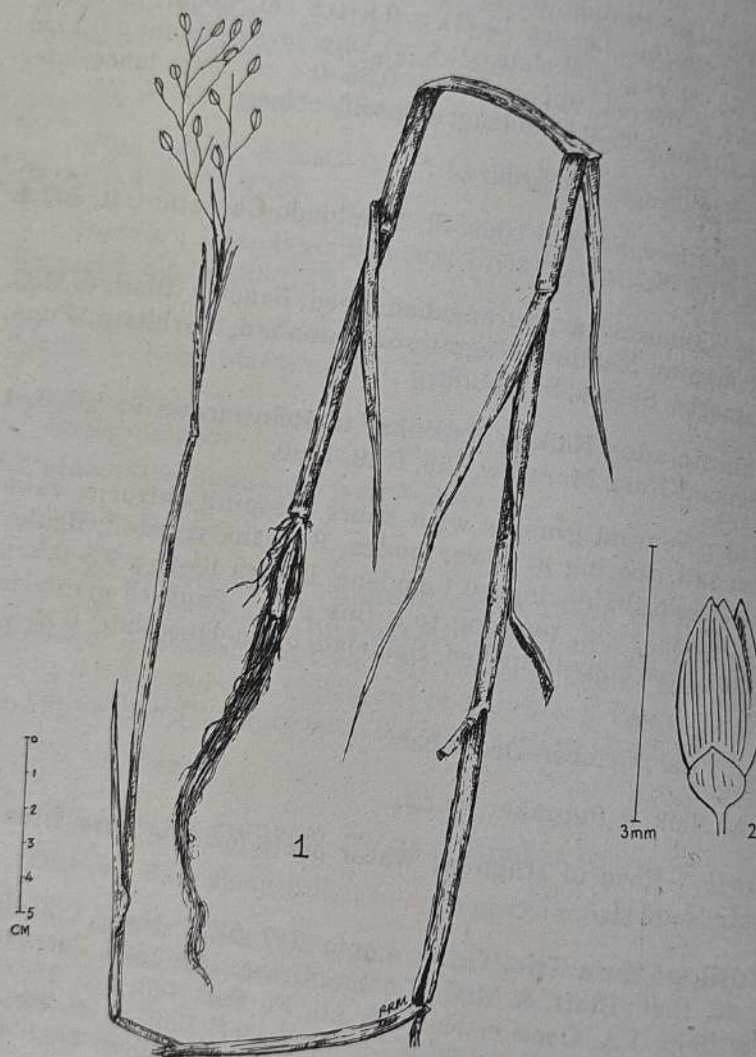
Fls. & Frts. : October-December.

Illus. : Naik & Patunkar, op.cit.

Distrib. : Rare in stagnant water pools forming pure strands. Amaravati; Nanded.

**P. psilopodium** Trin. Gram. Panic. 217. 1826; Hook. f. Fl. Brit. India 7: 46. 1896; Blatt. & McC. Bombay Grass. 158. 1935; Bor, Grass. Ind. 329. 1960; T.A. Cope in Nasir & Ali, Fl. Pak. 143: 170. 1982. *P. psilopodium* var. *coloratum* Hook. f. op.cit. 47; Bor, op.cit. 330. *P. sumatrense* ssp. *psilopodium* (Trin.) de Wet in J. d. Agric. Trad. et de Bota Appl. 30(2): 162. 1983. 'Saga'.

Herbs, 15-35 cm high, slender, tufted, erect or basally geniculate. Leaves 6.5-10.0 x 0.4-0.6 cm, linear. Panicles 7-11 cm long, effuse. Spikelets 0.2-0.5 cm long, oblong-ellipsoid. Grains ellipsoid, firmly enclosed by yellowish lemma.



*Panicum psilopodium* Trin.  
1. Habit 2. Spikelet

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Ills. :  
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*Fls. & Frts.* : August–October.

*Ills.* : Patunkar, Grass. Marathw. 162, f. 50. 1980; Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 804. 1988.

*Distrib.* : Common in all districts.

***P. repens*** L. Sp. Pl. ed. 2. 187. 1762; Hook. f. Fl. Brit. India 7: 49. 1986; Bor, Grass. Ind. 330. 1960.

Perennials, rhizomatous, creeping; culms 40–90 cm long, rooting at basal nodes. Leaves 10–15 x 0.5–0.7 cm, linear. Panicles 8–15 cm long. Spikelets c 0.3 cm long, lanceolate; lower glumes; c 0.08 cm long, cupular; upper glumes 0.25–0.3 cm long, elliptic, 5–7-nerved, apex acute. Grains 0.22–0.25 cm long, oblong.

*Fls. & Frts.* : October–December.

*Illus.* : Gilliland, Fl. Malaya 3: 136, f. 25. 1971; Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: tt. 805 & 806. 1988.

*Distrib.* : Kolhapur; Nanded; Parbhani; Pune; Ratnagiri; Sangli; Sindhudurg.

***P. sumatrense*** Roth ex R. & S. Syst. Veg. 2: 434. 1817; Bor, Grass. Ind. 701. 1960. *P. miliare* Lam. Illustr. 1: 173. 1791; Hook. f. Fl. Brit. India 7: 46. 1896; Cooke, Fl. Pres. Bombay 3: 456. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 160. 1935. 'Sava'.

Annuals, c 100 m tall, erect. Leaves 15–22 x 0.6–1.0 cm, linear-lanceolate, glabrous. Panicles 15–20 long. Spikelets c 0.25 cm long, elliptic; lower glumes c 0.1 cm long, upper glumes c 0.25 cm long, ovate, 7–9-nerved.

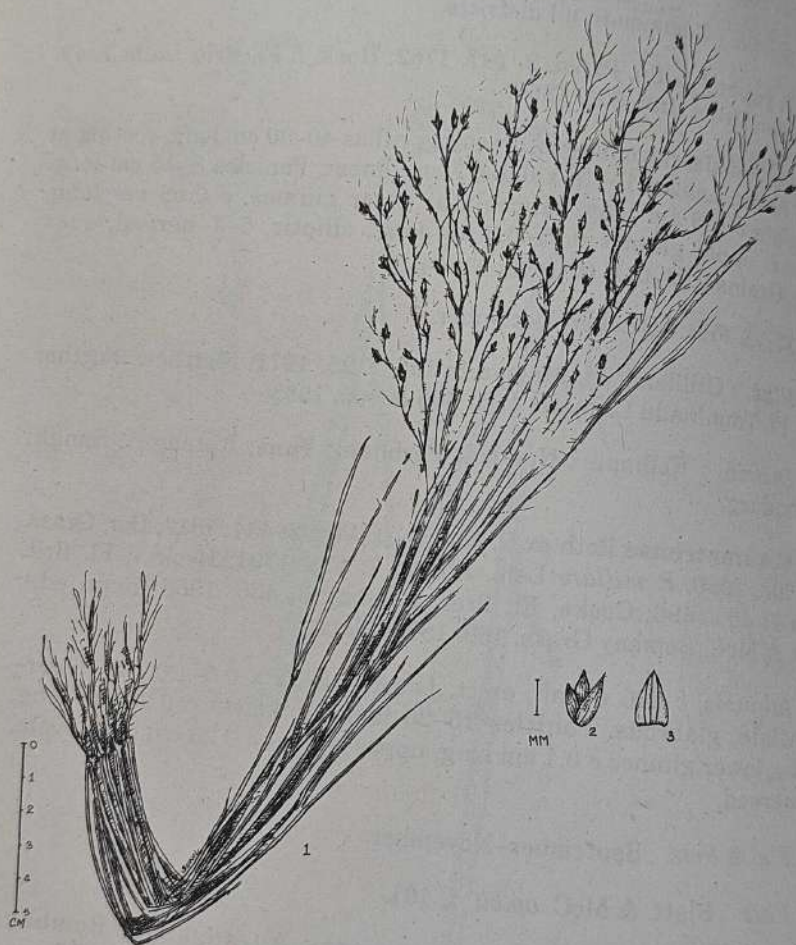
*Fls. & Frts.* : September–November.

*Illus.* : Blatt. & McC. *op.cit.* t. 101.

*Distrib.* : Ahmednagar; Amaravati; Aurangabad; Bombay; Chandrapur; Dhule; Kolhapur; Nagpur; Pune; Ratnagiri; Satara; Sindhudurg.

***P. trypheron*** Schult. Syst. Veg. 2, Mant. 244. 1824; Hook. f. Fl. Brit. India 7: 47. 1896; Cooke, Fl. Pres. Bombay 3: 452. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 158. 1935; Bor, Grass. Ind. 331. 1960. 'Bhatur'.

Annuals, 50–60 cm tall. Leaves 10–15 x 0.4–0.5 cm, linear, hairy on both sides, bulbous based hairy along margins. Panicles 10–15 cm



*Panicum walense* Mez  
1. Habit 2. Spikelet 3. Upper glume

long. Spike  
scaberulou  
7-9-nerve

Fls. &

Illus.  
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long. Spikelets c 0.3 cm long, ovoid; lower glumes c 0.15 cm long, ovate, scaberulous on median nerves at tip; upper glumes c 0.3 cm long, ovate, 7-9-nerved. Grains c 0.25 cm long, oblong.

Fls. & Frts. : October–November.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: tt. 904 & 905. 1982.

Distrib. : Ahmednagar; Akola; Amaravati; Aurangabad; Beed; Buldhana; Chandrapur; Kolhapur; Nagpur; Parbhani; Pune; Raigad; Ratnagiri; Sangli; Satara; Sholapur (Cooke, op.cit.); Sindhudurg; Yavatmal.

*P. walense* Mez in Bot. Jahrb. 34: 146. 1904 ("*watense*"); T.A. Cope in Nasir & Ali, Fl. Pak. 143: 166. 1982. *P. humile* Nees ex Steud. Syn. Pl. Glum. 1: 84. 1854 non Thunb. ex Trin. 1826; Hook. f. Fl. Brit. India 7: 48. 1896. *P. austroasiaticum* Ohwi in Act. Phytotax. Geobot. 2: 45. 1942; Bor, Grass Ind. 324. 1960.

Herbs, annual; culms terete, 10–40 cm tall, branched, often purplish. Sheaths compressed; ligule hairy, annular. Leaves 2–10 x 0.25–0.5 cm, linear-lanceolate, margins scaberulous, apex acuminate. Panicles ovoid-oblong, 3–12 cm long, lax. Spikelets linear-lanceolate, 0.18–0.2 cm long, pale, tinged with red. Grains ellipsoid-oblong, c 0.15 cm long.

Fls. & Frts. : August–December.

Illus. : Sreek. & Nair, Fl. Kerals Grass. 277, t. 55. 1991.

Distrib. : Rare along margins of ponds in forests. Bombay; Chandrapur; Nagpur; Nanded; Sindhudurg.

#### PASPALIDIUM Stapf

1. Spikes shorter than internodes ... *P. flavidum*
1. Spikes longer than internodes :
  2. Perennials; rhachis of spikes produced into a sharp point; upper glume half the length of upper lemma or more; upper lemma rugulose ... *P. punctatum*
  2. Annuals; rhachis of spikes not produced into a sharp point; upper glume nearly as long as upper lemma; upper lemma granular ... *P. geminatum*

*Paspalidium flavidum* (Retz.) A. Camus in Lecomte, Fl. Gen. Indo-Chine 7: 419. 1922; Blatt. & McC. Bombay Grass. 141. 1935; Bor,

Grass. Ind. 333. 1960. *Panicum flavidum* Retz. Obs. Bot. 4: 15. 1788; Hook. f. Fl. Brit. India 7: 28. 1896; Cooke, Fl. Pres. Bombay 3: 445. 1958 (Repr. ed.). 'Burad', 'Shedya'.

Herbs, perennial; culms 15–50 cm tall, tufted, erect or ascending from a decumbent base. Leaves 8–15 x 0.5–1.0 cm, lanceolate; sheaths hairy at throat. Racemes 15–20 cm long. Spikelets c 0.2 cm long, ovoid. Grains orbicular.

Fls. & Frts. : July–October.

Illus. : Blatt. & McC. op.cit. t. 90; Mahesh. Illus. Fl. Delhi f. 264. 1966; Patunkar, Grass. Marathw. 167, f. 51. 1980; Ugemuge, Fl. Nagpur Dt. t. 190. 1986.

Distrib. : Common throughout in damp and moist places.

**P. geminatum** (Forssk.) Stapf in Prain, Fl. Trop. Afr. 9: 583. 1920; Blatt. & McC. Bombay Grass. 142. 1935; Bor, Grass. Ind. 333. 1960. *Panicum geminatum* Forssk. Fl. Aegypt.–Arab. 18. 1775. *P. fluitans* Retz. Obs. Bot. 3: 8. 1783; Cooke, Fl. Pres. Bombay 3: 446. 1958 (Repr. ed.). *P. paspaloides* Pers. Syn. 1: 81. 1805; Hook. f. Fl. Brit. India 7: 30. 1896.

Herbs, perennial up to 1 m high. Leaves linear, finely acuminate; ligule a ridge of hairs. Racemes 5–20, sessile, 0.75–1.75 cm long. Spikelets 0.2–0.3 cm long, ovoid, acute, imbricate, shortly pedicelled. Grains ovoid.

Fls. & Frts. : September–March.

Illus. : Rang. & Tad. S. Indian Gr. 71 & 72, f. 84 & 85. 1921 (*P. fluitans*); Subr. Aquat. Ang. 172, f. 60. 1962; Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: tt. 809 & 810. 1988.

Distrib. : Common in all districts.

**P. punctatum** (Burm. f.) A. Camus in Lecomte, Fl. Gen. Indo-Chine 7: 419. 1922; Blatt. & McC. Bombay Grass. 142. 1935; Bor, Grass. Ind. 333. 1960. *Panicum punctatum* Burm. f. Fl. Ind. 26. 1768; Hook. f. Fl. Brit. India 7: 29. 1896; Cooke, Fl. Pres. Bombay 3: 445. 1958 (Repr. ed.). 'Petnar'.

Herbs, perennial; culms 0.5–1.0 m long, robust, floating, rooting at lower nodes. Leaves linear; lower sheaths inflated. Inflorescence 10–20 cm long; spikes 2–4 cm long, lax. Spikelets in 2 rows, 0.18–0.25 cm long, greenish-yellow, ovoid-oblong; upper glume ovate; lower lemma ovate-lanceolate, coriaceous, finely punctate.

Frts. & Frts.

Illus. : Blatt. & McC. op.cit. t. 90; Mahesh. Illus. Fl. Delhi f. 264. 1966; Patunkar, Grass. Marathw. 167, f. 51. 1980; Ugemuge, Fl. Nagpur Dt. t. 190. 1986.

Distrib. : A (Cooke, op.cit.).

1. Spikelets small

1. Spikelets muc on margins :

2. Spikelet upper gl

2. Spikelet

3. Sp ell

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4.

Pasp

*Panicum*

*compactum*

1896; Cooke, Fl. Pres. Bombay 3: 445. 1958 (Repr. ed.).

Bombay C

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*Frts. & Frts.* : September–December.

*Illus.* : Blatt. & McC. *op.cit.* t. 91: Gilliland, Fl. Malaya 3: 174, f. 35. 1971; Matthew, *Illus. Fl. Tamilnadu Carnatic* 2: tt. 906 & 907. 1982.

*Distrib.* : Ahmednagar (Cooke, *op.cit.*); Jalgaon; Kolhapur; Pune (Cooke, *op.cit.*).

PASPALUM L.

1. Spikelets small, up to 0.125 cm long ... *P. canarae*
1. Spikelets much larger of if less than 0.2 cm long, then ciliate on margins :
  2. Spikelets fringed with fine white hairs, from margins of upper glume ... *P. dilatatum*
  2. Spikelets glabrous or pubescent, not ciliate on margins :
    3. Spikelets rotundate-ellipsoid, broadly obovoid-ellipsoid almost orbicular, obtuse ... *P. scrobiculatum*
    3. Spikelets broadly ellipsoid to ovoid-ellipsoid, acute :
      4. Upper glume covered with a short pubescence; lower lemma with a prominent middle nerve; racemes often long, up to 9 cm long; erect grasses; spikelets ellipsoid, twice as long as broad ... *P. paspalodes*
      4. Upper glume glabrous; middle nerve of lower lemma faint; racemes short, not above 4 cm long; grasses with prostrate stems rooting at nodes; spikelets broadly lanceolate, three times as long as broad ... *P. vaginatum*

*Paspalum canarae* (Steud.) Veldk. in Blumea 21: 72. 1973. *Panicum canarae* Steud. Syn. Pl. Glum. 1: 58. 1853. *Paspalum compactum* auct. non Roth ex R. & S. 1817; Hook. f. Fl. Brit. India 7: 12. 1896; Cooke, Fl. Pres. Bombay 3: 460. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 138. 1935; Bor, Grass. Ind. 336. 1960.

1. Margins of upper glume glabrous ... var. *canarae*
1. Margins of upper glume fimbriate ... var. *fimbriatum*

var. *canarae*. 'Kuri'.

Herbs, perennial, 15–30 cm high, erect or suberect, tufted. Leaves 1.5–4.5 x 0.4–1.2 cm, elliptic-lanceolate, sparsely hairy on both sides; sheaths densely bulbous hairy; ligule short. Racemes 6–20, 0.5–2.0 cm long. Spikelets c 0.1 cm long. Grains hemispheric, brown.

*Fls. & Frts.* : August–October.

*Illus.* : Blatt. & McC. *op.cit.* t. 88.

*Distrib.* : Ahmednagar; Chandrapur; Kolhapur; Nasik; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

var. *fimbriatum* (Bor) Veldk. in *Blumea* 21: 72. 1973. P. *compactum* var. *fimbriatum* Bor, *Grass. Ind.* 336. 1960.

Annuals, decumbent-ascending; nodes hairy. Leaves 1.5-4.0 x 0.5-1.2 cm, ovate-elliptic to lanceolate, tubercle-based hairy on both sides and along margin, nerves raised above. Racemes 1-2 cm long. Spikelets c 0.2 cm long, ovoid; lower glumes c 0.15 cm long, elliptic-oblong, hyaline winged in upper half, margin long ciliate; upper glumes c 0.2 cm long, ovate.

*Fls. & Frts.* : August-November.

*Distrib.* : Ahmednagar; Kolhapur; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

*P. dilatatum* Poir. in *Lam. Encycl.* 5: 35. 1804; Blatt. & McC. *Bombay Grass.* 138. 1935; Bor, *Grass. Ind.* 338. 1960.

Tall erect grasses, 1.0-1.5 m high; culms developing from a thick rootstock. Leaves c 30 x 0.8-1.2 cm, rugose along both margins. Racemes 12-30 cm long. Spikelets closely arranged in 4 rows, 0.3-0.4 x 0.15-0.2 cm, ovoid, acutely pointed.

*Fls. & Frts.* : June-August.

*Distrib.* : Introduced. Pune.

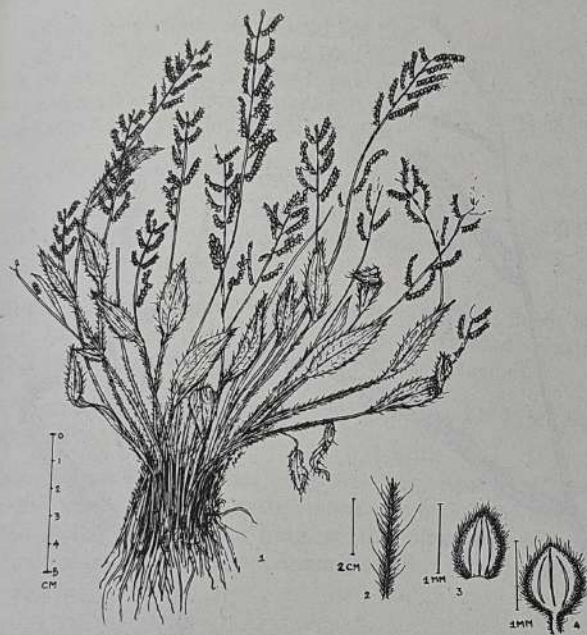
*P. paspalodes* (Michx.) Scribner in *Mem. Torr. Bot. Cl.* 5: 29. 1894 (*'paspaloides'*); Bor *Grass. Ind. Append. II.* 1973 (Repr. ed). *Digitaria paspalodes* Michx. *Fl. Bor. Amer.* 1: 46. 1803. *Paspalum distichum* auct. non L. 1759, *nom. confus.*; Hook. f. *Fl. Brit. India* 7:12.1896; Cooke, *Fl. Pres. Bombay* 3:460. 1958 (Repr. ed.); Bor, *Grass. Ind.* 338. 1960.

Annuals; culms 15-40 cm tall, prostrate or decumbent-ascending. Leaves 3-8 x 0.3 cm, linear. Racemes 2-4 cm long; rhachis c 0.2 cm broad. Spikelets c 0.35 cm long, elliptic, 1-nerved, accommodated in curved spaces; lower glumes absent, upper glumes c 0.35 cm long, ovate, apex acute, 1-nerved; lower lemma c 0.35 cm long, elliptic. Grains ellipsoid-oblong.

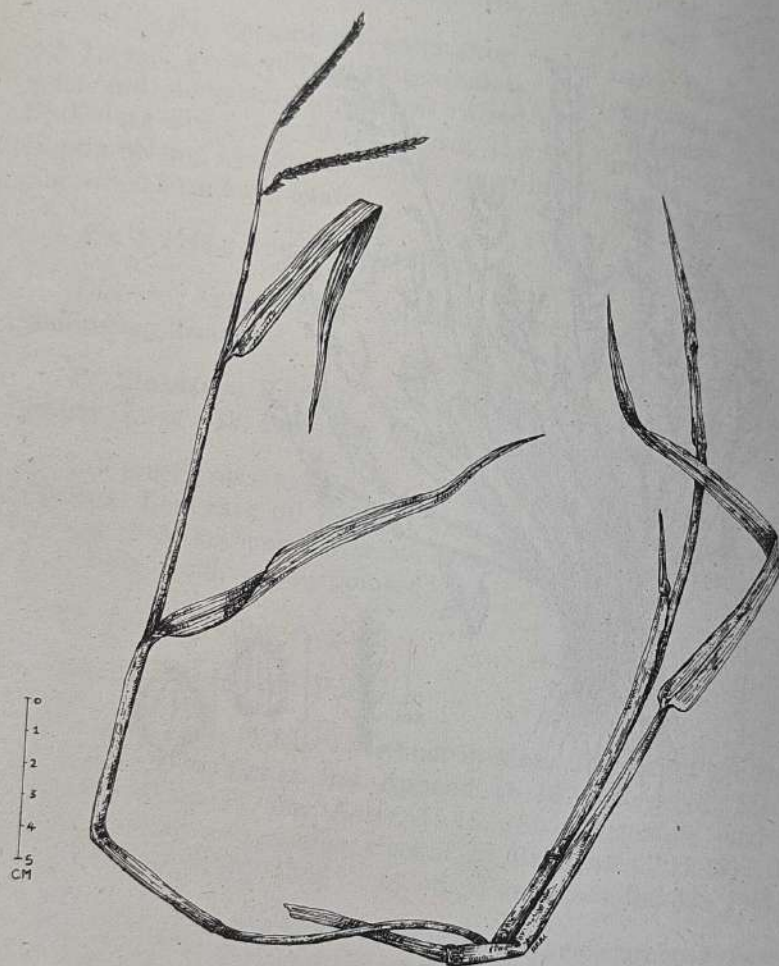
*Fls. & Frts.* : October-January.

*Distrib.* : Amaravati; Aurangabad; Bombay; Kolhapur; Parbhani; Ratnagiri; Sangli; Satara; Sindhudurg.

*Paspalu*



*Paspalum canarae* (Stued.) Veldk. var. *fimbriatum* (Bor) Veldk.  
1. Habit 2. Rachis 3. Upper glume 4. Spikelet



*Paspalum paspalodes* (Michx.) Scribner

*P. scro*  
7: 10. 1896;  
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Clayton in  
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t. 43 f. 1. 179  
Haenk. 1: 2

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2.5-5.5 cm  
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*Illus.*  
Grass. M  
Tamilnadu

*Distr*  
Bombay;  
Raigad; R

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Ind. 341.

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*P. scrobiculatum* L. Mant. Pl. 1: 29. 1767; Hook. f. Fl. Brit. India 7: 10. 1896; Cooke, Fl. Pres. Bombay 3: 460. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 136. 1935; Bor, Grass. Ind. 340. 1960; W.D. Clayton in Kew Bull. 30: 101. 1975. *P. orbiculare* G. Forst. Fl. Insul. Austral. Prodr. 7. 1786; Bor, op.cit. *P. commersonii* Lam. Illustr. 1: 175, t. 43 f. 1. 1791; Bor, op.cit. 335. *P. cartilagineum* J.S. ex C. B. Presl, Rel. Haenk. 1: 216. 1830; Bor, op.cit. 'Harik', 'Kodra'.

Annuals or perennials, 30–50 cm high, decumbent-ascending. Leaves 3–7 x 0.5 cm, linear, deciduous, hairy on both sides. Racemes 2.5–5.5 cm long; rhachis c 0.18 cm broad. Spikelets c 0.2 cm long, ovoid; lower glumes absent, upper glumes c 0.2 cm long, ovate-oblong, thin, nerved. Grains c 0.15 cm long, suborbicular.

Fls. & Frts. : August–April.

Illus. : Blatt. & McC. op.cit. t. 57; Bor, op.cit. 337, f. 38; Patunkar, Grass. Marathw. 170, f. 52. 1980; Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 813. 1988.

Distrib. : Ahmednagar; Amaravati; Aurangabad; Beed; Bhandara; Bombay; Chandrapur; Kolhapur; Nagpur; Nanded; Nasik; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane; Yavatmal.

*P. vaginatum* Swartz, Prodr. Veg. Ind. Occ. 21. 1788; Bor, Grass. Ind. 341. 1960.

Herbs; culms 2.5–15.0 cm long, creeping, rooting at lower nodes. Leaves 5–8 cm long. Spikes biternate, 2.5–3.7 cm long, shortly peduncled. Spikelets c 0.3 cm long, ovoid-oblong or ellipsoid-oblong; upper glume membranous; lower lemma similar to upper glume, upper lemma concave.

Fls. & Frts. : July.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: tt. 908 & 909. 1982.

Distrib. : Ahmednagar; Bombay, Satara; Sindhudurg.

# PENNISETUM L. C. Rich. ex Pers.

1. Lemmas heteromorphous; lower often 3-lobbed; upper floret readily disarticulating; rhachis with decurrent wings on ribs below pedicels :

2. Spikelets solitary and pedicelled or in groups of 2–5, with one sessile and the other pedicelled; lower glume at least half the length of lower lemma

... *P. pedicellatum*

2. Spikelets sessile, solitary; lower glumes minute or small, rarely, if ever, half as long as lower lemma :
3. Annuals; culms much branched
3. Perennials; culms not, or sparingly branched ... *P. polystachion*
1. Lemmas more or less alike; lower not 3-lobed; upper floret not deciduous; rhachis ribbed but not conspicuously so; ribs not winged : ... *P. setosum*
4. Rhachis of spikes glabrous, often scabrid
4. Rhachis of spikes villous or woolly : ... *P. hohenackeri*
5. Tip of peduncle usually glabrous or slightly puberulous; spikelets c 0.4 cm long, 2 or more in an involucre, occasionally solitary; rhachis flexuous ... *P. orientale*
5. Tip of peduncle hairy; spikelets c 0.6 cm long, solitary; rhachis straight :
6. Involucral bristles golden, longest 1.0-1.8 cm long; spikelets sessile, spreading at right angles to rhachis ... *P. purpureum*
6. Involucral bristles purple, longest 2-3 cm long; spikelets long pedicellate, usually ascending ... *P. alopecuroides*

***Pennisetum alopecuroides* (L.) Spr. Syst. Veg. 1: 303. 1825; Bor, Grass. Ind. 343. 1960. *Panicum alopecuroides* L. Sp. Pl. 55. 1753.**

Densely tufted perennial, 30-60 cm high. Tips of peduncle hairy. Spikelets c 0.6 cm long, solitary, long-pedicellate, usually ascending, involucral bristles purple, longest 2-3 cm long.

*Distrib.* : Pune.

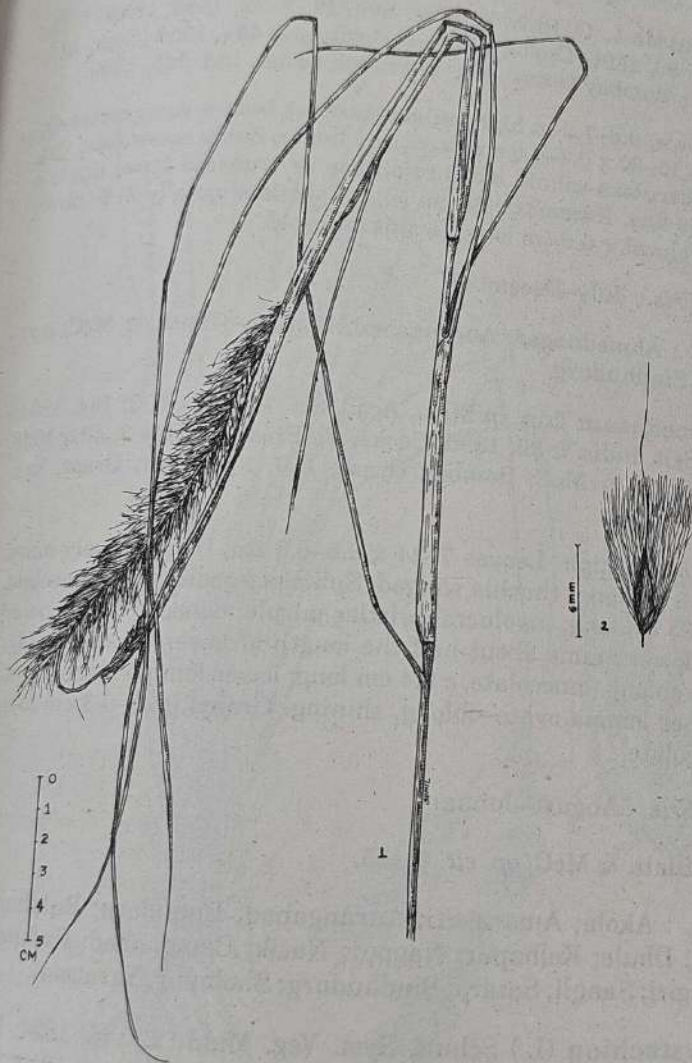
***P. hohenackeri* Hochst. ex Steud. Syn. Pl. Glum. 1: 103. 1854; Bor, Grass. Ind. 344. 1960. *P. alopecuroides* Steud. *op.cit.* 102 non Jacq. 1844; Hook. f. Fl. Brit. India 7: 84. 1896; Cooke, Fl. Pres. Bombay 3: 430. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 178. 1935. 'Mohl'.**

Herbs, perennial, 60-90 cm high, erect, tufted. Leaves 10-50 x 0.2-0.4 cm, linear, convolute; sheaths glabrous or nearly so; ligule a small hairy ring. Racemes spiciform. Spikelets up to 1 cm long, narrowly lanceolate; pedicels short with a few long bristles. Grains lanceolate.

*Fls. & Frts.* : September-February.

*Illus.* : Blatt. & McC. *op. cit.* t. 113; Patunkar, Grass. Marathw. 172, f. 53. 1980; Matthew, *Illus. Fl. Tamilnadu Carnatic* 2: tt. 910 & 911. 1982.

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*Pennisetum alopecuroides* (L.) Spreng.

1. Habit 2. Spikelet with bristles

*Distrib.* : Ahmednagar; Amaravati; Aurangabad; Beed; Dhule (Blatt. & McC. *op. cit.*); Kolhapur; Nagpur; Nasik (Blatt. & McC. *op. cit.*); Osmanabad; Parbhani; Pune; Ratnagiri; Sangli; Satara; Sindhudurg.

**P. orientale** L. C. Rich. in Pers. Syn. Pl. 1: 72. 1805; Hook. f. Fl. Brit. India 7: 86. 1896; Cooke, Fl. Pres. Bombay 3: 431. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 179. 1935; Bor, Grass. Ind. 345. 1960.

Perennials, 0.6–1.2 m high; culms suberect from a stout rootstock, leafy. Leaves 15–30 x 0.3–1.0 cm, narrowly linear, finely acuminate, flat, margins scaberulous-ciliate close to obtuse or truncate base, ligule a shortly ciliate line. Racemes c 25 cm long. Spikelets usually 2–6 (rarely 1) within involucre, c 0.6 cm long. Grains ellipsoid.

*Fls. & Frts.* : July–December.

*Distrib.* : Ahmednagar; Aurangabad; Bombay (Blatt. & McC. *op. cit.*); Satara; Sindhudurg.

**P. pedicellatum** Trin. in Mem. Acad. Sci. Petersb. 6, 3: 184. 1834; Hook. f. Fl. Brit. India 7: 86. 1896; Cooke, Fl. Pres. Bombay 3: 431. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 180. 1935; Bor, Grass. Ind. 346. 1960.

Herbs, c 1 m high. Leaves 7–24 x 0.6–0.8 cm, flat, sparsely hairy. Panicles 4–13 cm long; rhachis winged. Spikelets pedicelled, lanceolate, solitary, c 0.35 cm long; involucre bristles purple, densely villous below the middle; lower glume about half the length of lower lemma, woolly; upper glume oblong-lanceolate, c 0.4 cm long; lower lemma oblong, c 0.3 cm long; upper lemma ovate-oblong, shining. Grains 0.25–0.3 cm long, oblong-lanceolate.

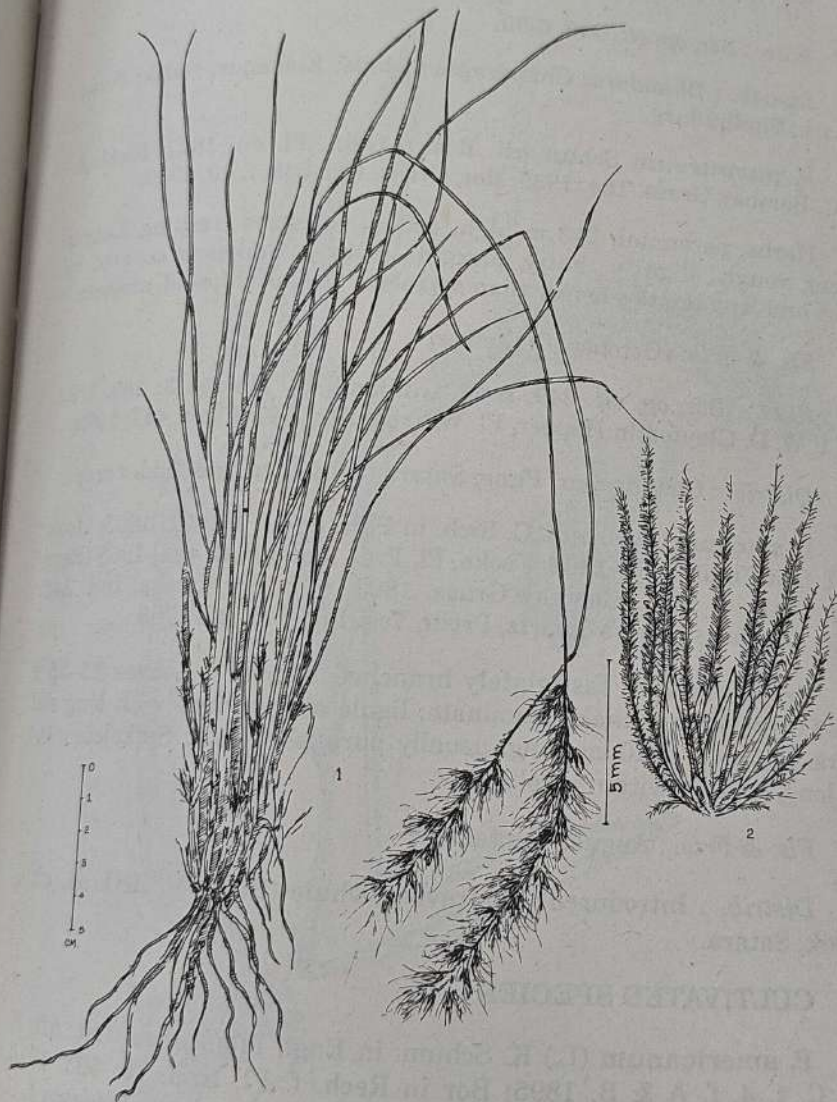
*Fls. & Frts.* : August–January.

*Illus.* : Blatt. & McC. *op. cit.* t. 115.

*Distrib.* : Akola; Amaravati; Aurangabad; Bhandara; Buldhana; Chandrapur; Dhule; Kolhapur; Nagpur; Nasik; Osmanabad; Parbhani; Pune; Ratnagiri; Sangli; Satara; Sindhudurg; Sholapur; Yavatmal.

**P. polystachion** (L.) Schult. Syst. Veg. Mant. 2: 146. 1824; Bor, Grass. Ind. 346. 1960. *Panicum polystachion* L. Syst. Nat. ed. 10. 2: 870. 1759.

Perennials, 100–175 cm tall; culms stout. Leaves 12–40 x 0.5–1.5 cm, linear-lanceolate, hairy on both sides, hairs tubercle-based, margins minutely scaberulous. Panicles cylindrical, 12–15 cm long; peduncles yellowish, pubescent. Spikelets 3 cm long, including bristles;



*Pennisetum orientale* L.C. Rich  
1. Habit 2. Spikelet

involucral bristles many, yellowish, plumose; lower glumes c 0.3 cm long, hyaline, oblong, 1-nerved, hairy.

*Fls. & Frts.* : February–March.

*Illus.* : Bor, *op. cit.* 347, f. 39.

*Distrib.* : Bhandara; Chandrapur; Dhule; Kolhapur; Nasik; Pune; Satara; Sindhudurg.

**P. purpureum** Schumach. Beskr. Guin. Pl. 44. 1827; Blatt. & McC. Bombay Grass. 184. 1935; Bor, Grass. Ind. 348, f. 40. 1960.

Herbs, perennial, 2–3 m high, tufted; rhizomes creeping. Leaves linear, rough, slightly hairy, margins scabrid. Spikelets covered by short and long bristles longer than spikelets. Grains ellipsoid, aristate.

*Fls. & Frts.* : October–December.

*Illus.* : Bor, *op. cit.* 349, f. 40; Gilliland, Fl. Malaya 3: 163, f. 32. 1971; W. D. Clayton in Hepper, Fl. W. Trop. Afr. 3(2): 462, f. 447. 1972.

*Distrib.* : Chandrapur; Pune; Satara (cultivated as a fodder crop).

**P. setosum** (Swartz) L.C. Rich. in Pers. Syn. Pl. 1: 72. 1805; Hook. f. Fl. Brit. India 7: 87. 1896; Cooke, Fl. Pres. Bombay 3: 431. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 180. 1935; Bor, Grass. Ind. 348. 1960. *Cenchrus setosus* Swartz, Prodr. Veg. Ind. Occ. 26. 1788.

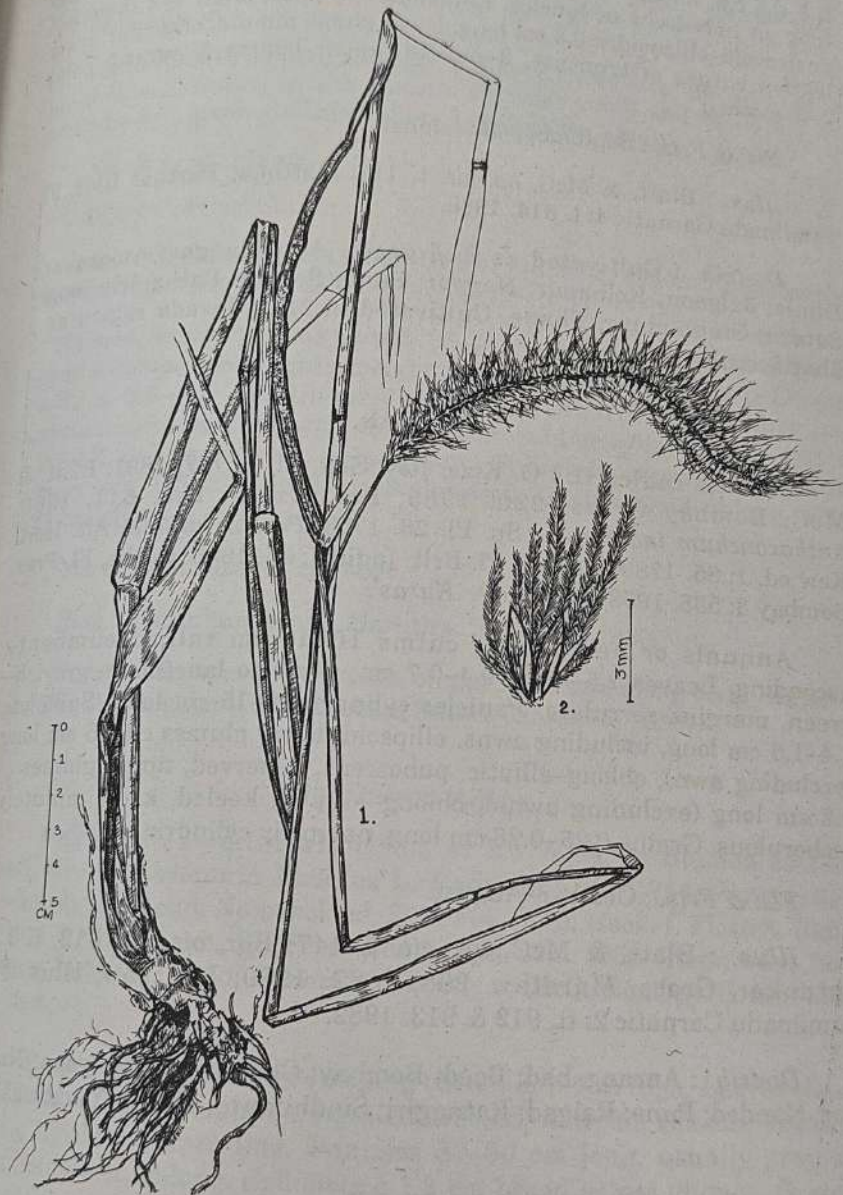
Erect, annuals, fastigiate branched at nodes. Leaves 15–25 x 0.6–1.0 cm, linear, finely acuminate; ligule a line fringe with long soft hairs. Racemes 5–10 cm long, usually purplish-brown. Spikelets c 0.4 cm long, solitary within involucrel.

*Fls. & Frts.* : August–September.

*Distrib.* : Introduced. Amaravati; Dhule (Blatt. & McC. *op. cit.*); Nasik; Satara.

#### CULTIVATED SPECIES :

**P. americanum** (L.) K. Schum. in Engl. Pflanzenew. Ost. Afr. B. 51, C. t. 4, f. A & B. 1895; Bor in Rech. f. Fl. Iran. 70: 503. 1970. *Panicum americanum* L. Sp. Pl. 56. 1753. *Pennisetum typhoideum* L.C. Rich. in Pers. Syn. Pl. 1: 72. 1805; Hook. f. Fl. Brit. India 7: 82. 1896; Cooke, Fl. Pres. Bombay 3: 432. 1958 (Repr. ed.). *P. typhoides* (Burm. f.) Stapf & C. E. Hubb. in Kew Bull. 1933: 271. 1933; Bor, Grass. Ind. 350. 1960. *P. spicatum* R. & S. Syst. Veg. 2: 499. 1817; Blatt. & McC. Bombay Grass. 182. 1935. 'Bajri'.



*Pennisetum setosum* (Swartz.) L. C. Rich  
1. Habit 2. Spikelet

Herbs; culms 2-3 m high, erect, nodes bearded. Leaves 15-20 x 0.3-0.5 cm, linear-lanceolate, scabrid. Panicles cylindrical, up to 30 cm long on pubescent peduncles. Spikelets 2-4 nate, often 1-2 imperfect ones ovoid-ellipsoid, c 0.3 cm long; lower glume minute, orbicular; lower lemma obtuse or truncate, 3-nerved, upper lemma 5-nerved; palea 2-3-toothed.

*Fls. & Frts.* : September-November.

*Illus.* : Blatt. & McC. *op. cit.* t. 117; Matthew, *Further Illus. Fl. Tamilnadu Carnatic* 4: t. 814. 1988.

*Distrib.* : Cultivated as food grain. Ahmednagar; Amaravati; Dhule; Jalgaon; Kolhapur; Nagpur; Pune; Raigad; Ratnagiri; Sangli; Satara; Sindhudurg; Thane. Cultivated in Marathwada region as a kharif crop.

#### PEROTIS Ait.

*Perotis indica* (L.) O. Ktze. *Rev. Gen. Pl.* 2: 787. 1891; Blatt. & McC. *Bombay Grass*. 220. 1935; Bor, *Grass. Ind.* 611. 1960. *Anthoxanthum indicum* L. *Sp. Pl.* 28. 1753. *Perotis latifolia* Ait. *Hort. Kew* ed. 1: 85. 1789; Hook. *f. Fl. Brit. India* 7: 98. 1896; Cooke, *Fl. Pres. Bombay* 3: 538. 1958 (Repr. ed.). 'Kuras'.

Annuals or perennials; culms 10-40 cm tall, decumbent-ascending. Leaves 1.5-3.0 x 0.4-0.7 cm, ovate to lanceolate, greyish-green, margins serrulate. Panicles cylindric, 8-15 cm long. Spikelets 1.4-1.6 cm long, including awns, ellipsoid; lower glumes c 0.25 cm long (excluding awn), oblong-elliptic, pubescent, 1-nerved; upper glumes c 0.2 cm long (excluding awns), oblong-elliptic, keeled, keels minutely scaberulous. Grains 0.25-0.28 cm long, narrowly cylindric.

*Fls. & Frts.* : October-August.

*Illus.* : Blatt. & McC. *op. cit.* t. 147; Bor, *op. cit.* 612, f. 72; Patunkar, *Grass. Marathw.* 268, f. 82. 1980; Matthew, *Illus. Fl. Tamilnadu Carnatic* 2: tt. 912 & 913. 1982.

*Distrib.* : Aurangabad; Beed; Bombay; Chandrapur; Jalgaon; Nagpur; Nanded; Pune; Raigad; Ratnagiri; Sindhudurg; Thane; Yavatmal.

#### PHALARIS L.

*Phalaris minor* Retz. *Obs. Bot.* 3: 8. 1783; Hook. *f. Fl. Brit. India* 7: 221. 1896; Bor, *Grass. Ind.* 616. 1960; Ugale & Patil in *J. Bombay nat. Hist. Soc.* 73: 558. 1976.

- |                                    |     |                        |
|------------------------------------|-----|------------------------|
| 1. Sterile lemmas present          | ... | var. <i>minor</i>      |
| 1. Sterile lemmas minute or absent | ... | var. <i>nepalensis</i> |

var. *minor*.

Culms 30–40 cm long, slender, hollow. Leaves long, narrow; ligule membranous, linear; sheath smooth. Panicles small and ovoid, longer and cylindric, green. Spikelets shortly pedicellate, shiny.

Fls. & Frts. : March.

Distrib. : Pune; Satara.

var. *nepalensis* (Trin.) Bor, Grass. Ind. 616. 1960. *P. nepalensis* Trin. Sp. Gram. Ic. t. 80. 1828.

Herbs, annual; culms tufted, 25–40 cm tall, branched near base. Sheaths compressed; ligule membranaceous, 0.5–0.7 cm long. Leaves 10–22 x 0.5–7.0 cm, linear-lanceolate, scabrid along margins, acuminate at apex. Panicles contracted, ovoid or cylindric, 2.5–4.25 x 1.25–1.7 cm, spiciform, pale-green. Spikelets strongly laterally compressed, 0.5–0.53 cm long, 3-flowered. Grains ovoid-oblong, 0.2–0.23 cm long.

Fls. & Frts. : July–December.

Illus. : Patunkar, Grass. Marathw. 270, f. 83. 1980.

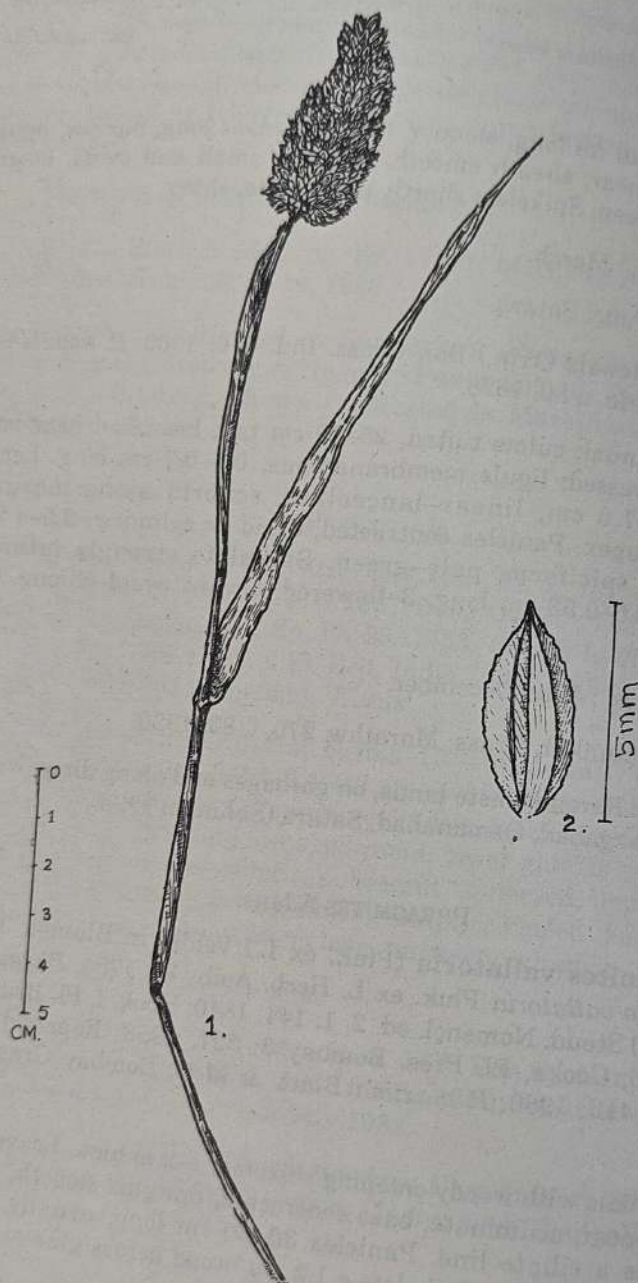
Distrib. : Rare in waste lands, on garbages and along dirty water puddles. Aurangabad; Osmanabad; Satara (Salunke, 1995).

## PHRAGMITES Adans.

*Phragmites vallatoria* (Pluk. ex L.) Veldk. in Blumea 37:233. 1992. *Arundo vallatoria* Pluk. ex L. Herb. Amb. 15. 1754. *Phragmites karka* (Retz.) Steud. Nomencl. ed. 2, 1: 144. 1840; Hook. f. Fl. Brit. India 7: 304. 1896; Cooke, Fl. Pres. Bombay 3: 527. 1958 (Repr. ed.); Bor, Grass. Ind. 416. 1960. *P. maxima* Blatt. & McC. Bombay Grass. 202. 1935 p.p.

Perennials with woody creeping rhizome, 1–2 m high. Leaves close, bifarious, linear, acuminate, base contracted, margins smooth; sheaths loose; ligule a ciliate line. Panicles 30–60 cm long, usually grey or purplish, erect, oblong. Spikelets c 1.2 cm broad across glumes. Grains cylindric.

Fls. & Frts. : October–January.



*Phalaris minor* Retz. var. *minor*.  
1. Habit 2. Lower glume

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*Illus.* : Patunkar, Grass. Marathw. 204, f. 62. 1980; Matthew, *Illus. Fl. Tamilnadu Carnatic* 2: tt. 914 & 915. 1982.

*Distrib.* : Aurangabad; Jalgaon; Kolhapur; Nagpur; Pune (Cooke, *op. cit.*); Sangli; Satara.

## POGONACHNE Bor

***Pogonachne racemosa*** Bor in Kew Bull. 1949: 176. 1949 & Grass. Ind. 200. 1960.

Erect, annuals or perennials; culms tufted, 60–100 cm tall. Leaves 10–20 x 0.7–1.4 cm, linear-lanceolate, tubercle-based hairy on both sides, margins scaberulous. Racemes 4–6 cm long, in spathe. Spikelets 0.6–0.9 cm long (excluding awn), awns c 2.4 cm long; lower glumes c 0.8 cm long, elliptic-ovate, coriaceous, glabrous on back, tip 1/3 portion 2-keeled, flat, scabrid, also along sides, upper glumes c 0.9 cm long, coriaceous, scabrid along sides and at tip.

*Fls. & Frts.* : October–November.

*Illus.* : Bor, *op. cit.* 201, f. 11.

*Distrib.* : Ahmednagar; Kolhapur; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

## POGONATHERUM P. Beauv.

- |  |     |                    |
|--|-----|--------------------|
| 1. Spikelets 0.25–0.3 cm long; callus hairs up to 0.15 cm long; lower floret male; upper floret with 2 stamens                         | ... | <i>P. paniceum</i> |
| 1. Spikelets less than 0.2 cm long; callus hairs c 0.2 cm long; lower floret empty or obsolete; upper floret with 1 (rarely 2) stamens | ... | <i>P. crinitum</i> |

***Pogonatherum crinitum*** (Thunb.) Kunth, Enum. Pl. 1: 478. 1833; Hook. f. *Fl. Brit. India* 7: 141. 1896; Cooke, *Fl. Pres. Bombay* 3: 484. 1958 (Repr. ed.); Blatt. & McC. *Bombay Grass*. 25. 1935; Bor, Grass. Ind. 200. 1960. *Andropogon crinitus* Thunb. *Fl. Jap.* 40, t. 7. 1784.

Densely tufted annual, 15–30 cm high. Leaves 2.5–7.5 x 0.25–0.5 cm, linear-lanceolate, acuminate, hairy; sheaths lax; ligule of long hairs. Racemes terminating branches of culms 2.0–2.5 cm long. Spikelets 0.2–0.25 cm long, usually membranous.

*Fls. & Frts.* : July–September.

*Illus.* : Matthew, *Illus. Fl. Tamilnadu Carnatic* 2:tt. 918 & 919. 1982.  
*Distrib.* : Pune.

**P. paniceum** (Lam.) Hack. in *Allg. Bot. Z.* 12: 178. 1906; Bor, *Grass. Ind.* 202. 1960. *Saccharum paniceum* Lam. *Encycl.* 1: 595. 1785 & *Illustr.* 12: 155, t. 40, f. 3. 1791. *Pogonatherum saccharoideum* P. Beauv. *Ess. Agrost.* 176, 177. 1812; Hook. f. *Fl. Brit. Inda* 7: 141. 1896; Cooke, *Fl. Pres. Bombay* 3: 484. 1958 (Repr. ed.); Blatt. & McC. *Bombay Grass.* 25. 1935.

Perennials, tufted; culms up to 60 cm high, wiry, stiff, usually erect. Leaves 1-5 x 0.1-0.3 cm. Racemes 1.5-3.0 cm long, dense, borne upon a flexuous peduncle, bearing numerous, long, delicate, yellowish-brown awns. Spikelets 0.25-0.3 cm long, ellipsoid-oblong.

*Illus.* : Gilliland, *Fl. Malaya* 3: 253, f. 55. 1971; T.A. Cope in Nasir & Ali, *Fl. Pak.* 143: 272, f. 29 (1-2). 1982.

*Distrib.* : Rare. Pune.

#### POLYPOGON Desf.

**Polypogon monspeliensis** (L.) Desf. *Fl. Atl.* 1: 67. 1798; Hook. f. *Fl. Brit. India* 7: 245. 1896; Blatt. & McC. *Bombay Grass.* 207. 1935; Bor, *Grass. Ind.* 403. 1960. *Alopecurus monspeliensis* L. *Sp. Pl.* 61. 1753.

Herbs, annual, 15-30 cm high, erect or suberect, tufted. Leaves 5.2-10.0 x 0.3-0.5 cm, linear-lanceolate, sparsely hairy. Inflorescence paniced; panicles dense, bristly, 2.5-4.0 cm long. Spikelets c 0.1 cm long, laterally compressed. Grains minute, ovoid.

*Fls. & Frts.* : July-February.

*Illus.* : Blatt. & McC. *op. cit.* t. 137; Mahesh. *Illus. Fl. Delhi* f. 274. 1966; Patunkar, *Grass. Marathw.* 196, f. 59. 1980.

*Distrib.* : Ahmednagar; Aurangabad; Kolhapur; Nanded; Nasik; Pune (Cultivated); Satara.

#### PSEUDANTHISTIRIA (Hack.) Hook. f.

1. Culms prostrate, filiform, weak; leaves glabrous, rounded at base, rather short and small, lanceolate, primary nerves not distinct
1. Culms erect, robust; leaves with tubercle based hairs, not rounded at base, linear and long, primary nerves on both sides of midrib distinct :

... *P. umbellata*

2. Peduncles
2. Peduncles
3. Lower rhachis pseudolanceolate
3. Lower midrib or (pseudolanceolate) covered at base

**Pseudanthistiria**  
 219. 1896; Blatt. & McC. 1960. *Anthistiria*

Herbs, annual, 15-30 cm high. Leaves 0.6-0.8 cm long, linear-oblong

*Fls. & Frts.*

*Illus.* : Blatt. & McC. 1960.

*Distrib.* : Kolhapur; Nanded; Nasik

**P. hispidula**  
 Bombay 3: 1935; Bor, Cope

Herbs, annual, 15-30 cm, linear, sessile spikelets, lanceolate,

*Fls. & Frts.*

*Illus.*

*Distrib.* : Buldhana; Ratnagiri

**P. indica**  
 192. 1976

2. Peduncles of pseudo-raceme glabrous ... *P. heteroclita*
2. Peduncles of pseudo-raceme hairy :
  3. Lower glume of fertile spikelet quite glabrous; rhachis or peduncle of unit of the paired fascicle of pseudo-raceme c 0.6 cm long; spatheole with long cilia and glabrous at base except 1 or 2 hairs ... *P. hispida*
  3. Lower glume of fertile spikelet glabrous in the middle surface and shortly hispid on margin; rhachis or (peduncle of unit) of the paired fascicle of pseudo-raceme c 0.8 cm long; spatheole on keel covered with large cilia while fringe of hairs present at base of spatheole ... *P. intermedia*

**Pseudanthistiria heteroclita** (Roxb.) Hook. f. Fl. Brit. India 7: 219. 1896; Blatt. & McC. Bombay Grass. 121. 1935; Bor, Grass. Ind. 203. 1960. *Anthistiria heteroclita* Roxb. Fl. Ind. 1: 253. 1820. 'Phulada'.

Herbs, annual, densely tufted, basally geniculate, erect, up to 60 cm high. Leaves 7-15 x 0.3 cm, linear. Panicles c 12 cm long; spikes 0.6-0.8 cm long, spathaceous. Sessile spikelets 0.3-0.4 cm long, linear-oblong; pedicelled spikelets lanceolate.

Fls. & Frts. : September-October.

Illus. : Blatt. & McC. op. cit. t. 75.

Distrib. : Common. Ahmednagar; Amaravati; Bhandara; Bombay; Kolhapur; Nasik; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

**P. hispida** Hook.f. Fl. Brit. India 7: 219. 1896; Cooke, Fl. Pres. Bombay 3: 512. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 120. 1935; Bor, Grass. Ind. 203. 1960. 'Pokalya'.

Herbs, annual, erect, stout, 30-60 cm high. Leaves 5-12 x 0.3-0.6 cm, linear, bulbous hairy on both sides. Panicles elongate, 6-9 cm long. Sessile spikelets c 0.4 cm long, ovoid-oblong; pedicelled spikelets lanceolate, hairy.

Fls. & Frts. : September-January.

Illus. : Patunkar, Grass. Marathw. 88, f. 26. 1980.

Distrib. : Amaravati; Aurangabad; Bombay (Blatt. & McC. op. cit.); Buldhana; Kolhapur; Nagpur; Nasik; Parbhani; Pune; Raigad; Ratnagiri; Satara (Cooke, op. cit.); Sindhudurg; Thane.

**P. intermedia** Birari & D'Cruz in J. Bombay nat. Hist. Soc. 73: 192. 1976.

Annuals; culms erect or geniculately ascending, terete, many noded. Leaves tubercled hairy, linear and long; ligule truncate, ciliate. Panicles leafy, elongate or simple with many short peduncled, fasciated spikelets enclosed in spatheole having long cilia on keel and a fringe of hairs at base, supported by small pedicels; pedicelled spikelets empty, bisexual spikelets usually 2.

*Fls. & Frts.* : November.

*Illus.* : Birari & D'Cruz, *op. cit.* 193, f. 1-5.

*Distrib.* : Dhule (Birari & D'Cruz, *op. cit.*).

**P. umbellata** (Hack.) Hook. f. *Fl. Brit. India* 7: 220. 1896; Bor, *Grass. Ind.* 204. 1960. *Andropogon umbellatus* Hack. in DC. *Monogr. Phan.* 6: 401. 1889.

Herbs, 30-40 cm tall; culms erect from decumbent rooting base. Leaves linear-lanceolate. Panicles 4-8 cm long; spathe margins ciliate, 0.9-1.5 cm long. Lower glume of sessile spikelet 0.8-1.0 cm long, 7-nerved, back sulcate on each side of midrib; lower glume of pedicelled spikelet c 0.45 cm long.

*Fls. & Frts.* : October-November.

*Distrib.* : Kolhapur; Raigad; Ratnagiri; Satara; Sindhudurg.

#### PSEUDOBRACHIARIA Launert

**Pseudobrachiaria deflexa** (Schum.) Launert in Mitt. Bot. Staatssamml. Munchen 8: 158. 1970. *Panicum deflexum* Schum. *Beskr. Guin. Pl.* 63. 1827. *Brachiaria deflexa* (Schum.) C.E. Hubb. ex Robyns in *Bull. Jard. Brux.* 9: 181. 1932; Bor, *Grass. Ind.* 281. 1960.

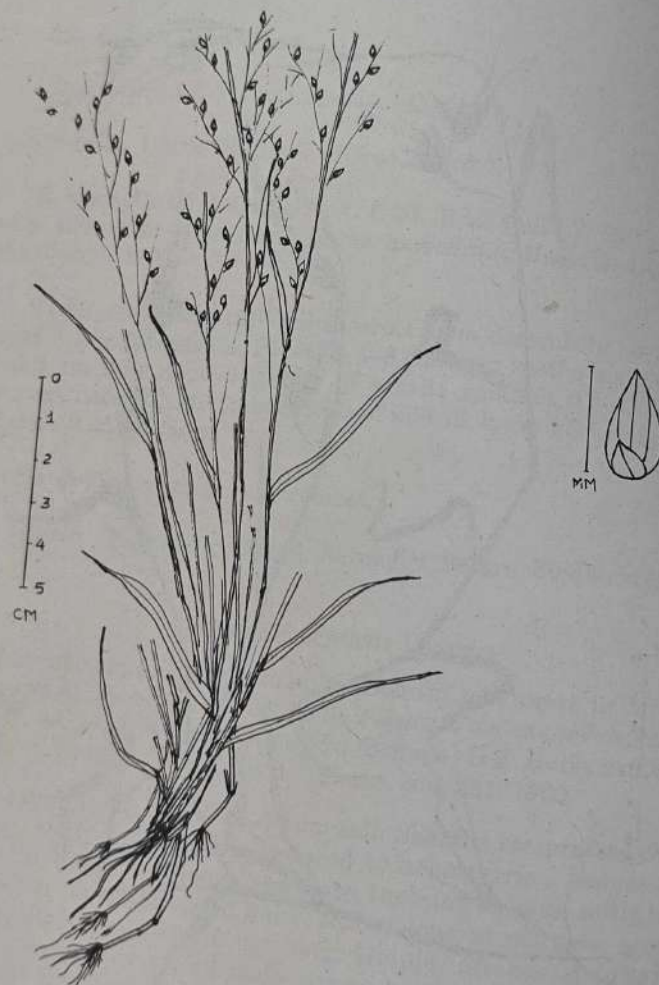
Annual herbs; culms 40-70 cm tall. Sheaths compressed, 2.5-11.0 cm long, softly hairy; ligule reduced to a hairy rim. Leaves 3-25 x 0.6-1.6 cm, linear to oblong-lanceolate, tapering at base, softly hairy to villous with short appressed hairs, scaberulous on margins, acuminate at apex. Racemes 3.5-8.0 cm long, simple, alternate, lower often paired. Spikelets paired, ellipsoid-oblong to obovoid, 0.3-0.35 cm long, pubescent, apiculate. Grains 0.22-0.25 cm long.

*Fls. & Frts.* : July-December.

*Distrib.* : Amaravati; Aurangabad; Beed; Nanded; Parbhani.



*Pseudanthistiria umbellata* (Hack.) Hook. f.



*Pseudobrachiaria deflexa* (Schum.) Launert

*Pseudodi-*  
Indian Forest  
*serrafalcoides* T  
Stapf ex Woodr  
Cooke, Fl. Pr  
*serrafalcoides* (C  
Soc. 32: 426. 19

Annuals,  
0.3-0.4 cm, lin  
scaberulous. R  
0.6 cm long, o  
long, ovate, t  
glumes c 0.55  
spikelet c 0.8

Fls. & Fr

Illus. : B

Distrib.  
Sindhudurg;

*Pseudo*  
Queensl. 62  
*spinescens* F  
Poir. in Lam  
Cooke, Fl. P  
(Koen.) Pilg  
Bombay Gra

Annua  
x 0.2-0.3 c  
scaberulous  
lower glum  
long, lanceo

Fls. &

Illus.  
1962; Patu  
Tamilnadu

## PSEUDODICHANTHIUM Bor

*Pseudodichanthium serratifalcooides* (T. Cooke & Stapf) Bor in Indian Forester 66: 272. 1940 & Grass. Ind. 204. 1960. *Andropogon serratifalcooides* T. Cooke & Stapf in Kew Bull. 1908: 450. 1908. *A. cookei* Stapf ex Woodr. in J. Bombay nat. Hist. Soc. 13: 438. 1901 *nom. tantum*; Cooke, Fl. Pres. Bombay 3: 506. 1958 (Repr. ed.). *Dichanthium serratifalcooides* (T. Cooke & Stapf) Blatt. & McC. in J. Bombay nat. Hist. Soc. 32: 426. 1928 & Bombay Grass. 95. 1935.

Annuals, 20–30 cm tall, decumbent–ascending. Leaves 4–9 x 0.3–0.4 cm, linear, sparsely bulbous-based hairy on both sides, margins scaberulous. Racemes 2–3 cm long, excluding awns. Sessile spikelets c 0.6 cm long, ovoid–ellipsoid, awns c 2.4 cm long; lower glumes c 0.6 cm long, ovate, 7–9-nerved, winged along margin, tips forked, upper glumes c 0.55 cm long, elliptic, hyaline, 3-nerved, apex acute; pedicelled spikelet c 0.8 cm long, ellipsoid.

Fls. & Frts. : September–November.

Illus. : Blatt. & McC. *op. cit.* t. 63.

Distrib. : Ahmednagar; Kolhapur; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

## PSEUDORAPHIS Griff.

*Pseudoraphis spinescens* (R. Br.) Vickery in Proc. Roy. Soc. Queensl. 62, n. 7, 69. 1952; Bor, Grass. Ind. 353. 1960. *Panicum spinescens* R. Br. Prodr. 193. 1810. *Chamaeraphis spinescens* (R. Br.) Poir. in Lam. Encycl. 2: 189. 1811; Hook. f. Fl. Brit. India 7: 62. 1896; Cooke, Fl. Pres. Bombay 3: 437. 1958 (Repr. ed.). *Pseudoraphis aspera* (Koen.) Pilger in Notizbl. Bot. Gard. Berlin 10: 210. 1928; Blatt. & McC. Bombay Grass. 168. 1935.

Annuals or perennials; shoots 15–30 cm long, trailing. Leaves 2–4 x 0.2–0.3 cm, linear, sparsely hairy above, glabrous below, margin scaberulous. Panicles 5–9 cm long. Spikelets, c 0.7 cm long, ellipsoid; lower glumes 0.5–0.8 cm long, ovate, glabrous; upper glumes 0.6 cm long, lanceolate, 9–11-nerved, scabrid along margins.

Fls. & Frts. : August–January.

Illus. : Blatt. & McC. *op. cit.* t. 109; Subr. Aquat. Ang. 173, f. 61. 1962; Patunkar, Grass. Marathw. 177, f. 54. 1980; Matthew, Illus. Fl. Tamilnadu Carnatic 2: tt. 922 & 923. 1982.

*Distrib.* : Bombay; Buldhana; Chandrapur; Kolhapur; Nanded; Parbhani; Pune; Raigad; Satara; Sindhudurg; Thane.

*Notes* : Cooke (3: 437) though had not seen any specimen from the area, reported on the authority of Woodrow (*op. cit.*). Blatter & McCann (1933) reported this species from Maharashtra, S. M. Country and N. Kanara.

#### PSEUDOSORGHUM A. Camus

*Pseudosorghum fasciculare* (Roxb.) A. Camus in Bull. Mus. Hist. Nat. Paris 26: 662. 1920; Bor, Grass. Ind. 205. 1960. *Andropogon fascicularis* Roxb. Fl. Ind. 1: 269. 1820; Hook. f. Fl. Brit. India 7: 177. 1896. *A. nitidulus* Hook. f. *op. cit.* 199.

Herbs, annual; culms terete, 30–70 cm tall, decumbent. Sheaths compressed, 4.5–6.0 cm long; ligule membranous, 0.15–0.17 cm long. Leaves 5–25 x 0.3–0.7 cm, lanceolate with a strong mid-vein, long-acuminate or caudate. Panicles ovoid-oblong, 7–10 cm long; apex slender, 3–4 cm long, mostly appressed to one another. Sessile spikelets ellipsoid-lanceolate, 0.4–0.43 cm long, awned; pedicelled spikelets narrowly linear, 0.4–0.43 cm long, neutral.

*Fls. & Frts.* : September–December.

*Illus.* : Patunkar, Grass. Marathw. 90, f. 27. 1980.

*Distrib.* : Rare in shade of bushes. Amaravati; Nanded; Pune; Satara.

#### PSEUDOXYTENANTHERA Soderstrom & Ellis

The genus *Oxytenanthera* described by Munro in 1868 was considered to be an African genus. Soderstrom & Ellis in 1988 discovered that Sri Lankan species of this genus actually belonged to a new taxon which they described as a new genus *Pseudoxystenantha* and transferred *Oxytenanthera monadelpha* Thw. under a new generic name. Majumdar in 1989 also independently came to the conclusion that Indian species of *Oxytenanthera* also differ from the actual original generic concept and described a new genus, *Pseudotenanthera*. This is a superfluous name and may be treated as a synonym of *Pseudoxystenantha*. Naithani, therefore effected new combinations.

1. Spikelets 1-flowered; anthers bristly-apiculate; styles glabrous

1. Spikelets 2-flowered; anthers acute; styles hairy

... *P. ritcheyi*

... *P. stocksii*

*Pseudoxyst...*  
nat Hist. Soc. 87  
Linn. Soc. 26: 11  
in J. Bombay r  
Forester 55: 5  
*monostigma* Be  
1873; Gamble in  
Hook. f. Fl. Bri  
1958 (Repr. ed.  
Karthik. et. al.

Culms 3-  
linear-lanceola  
spicate branch  
up to 6.2 cm in  
empty; floral g

*Illus.* : G.

*Distrib.* :

*P. stock*  
(1990) 1991.  
1868; Gamble  
Hook. f. Fl. I  
1958 (Repr  
*Pseudotenan*  
Ind. Enum. I

Slende  
7.5–15.5 cm  
cm, rounded  
spicate hea  
supported b  
mucronate,

*Fls. &*

*Illus.*

*Distr*

Rhy  
110. 1934

*Pseudoxytenanthera ritcheyi* (Munro) Naithani in J. Bombay nat. Hist. Soc. 87: 440. (1990) 1991. *Bambusa ritcheyi* Munro in Trans. Linn. Soc. 26: 113. 1868. *Oxytenanthera ritcheyi* (Munro) Blatt. & McC. in J. Bombay nat. Hist. Soc. 33: 773 (Oct.) 1929; Blatt. in Indian Forester 55: 592 (Nov.) 1929 & Bombay Grass. 284. 1935. *O. monostigma* Bedd. Fl. Sylv. 233. 1873 & Ic. Pl. Ind. Or. 1: 56, t. 234. 1873; Gamble in Ann. Roy. Bot. Gard. (Calcutta) 7: 74, t. 65. 1896 & in Hook. f. Fl. Brit. India 7: 402. 1896; Cooke, Fl. Pres. Bombay 3: 571. 1958 (Repr. ed.). *Pseudotenanthera ritcheyi* (Munro) R. Majumdar in Karthik. et. al. Fl. Ind. Enum. Monocot. 280. 1989. 'Chous'.

Culms 3–4 m high, yellow tomentose. Leaves 15–20 x 3.7 cm, linear-lanceolate, unequally cordate at base. Panicles large, terminal, of spicate branches bearing dense globular often large heads of spikelets up to 6.2 cm in diam. Spikelets 2.0–2.5 x 2.0 cm; involucre glumes 2–3, empty; floral glumes lanceolate, bisexual.

*Illus.* : Gamble, *op. cit.*

*Distrib.* : Ahmednagar; Pune; Ratnagiri; Satara.

*P. stocksii* (Munro) Naithani in J. Bombay nat. Hist. Soc. 87: 446. (1990) 1991. *Oxytenanthera stocksii* Munro in Trans. Linn. Soc. 26: 130. 1868; Gamble in Ann. Roy. Bot. Gard. (Calcutta) 7: 75, t. 66. 1896 & in Hook. f. Fl. Brit. India 7: 403. 1896; Cooke, Fl. Pres. Bombay 3: 571. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 284. 1935. *Pseudotenanthera stocksii* (Munro) R. Majumdar in Karthik. et al. Fl. Ind. Enum. Monocot. 280. 1989. 'Chivari', 'Konda'.

Slender bamboo c 7 m high; culm-sheaths 15.0–22.5 cm long, 7.5–15.5 cm wide at base; ligule deeply fimbriate. Leaves 10–20 x 1–2 cm, rounded or attenuate at base into a short petiole. Panicles large, of spicate heads with many closely packed spinous spikelets, the heads supported by rounded chaffy bracts. Spikelets 1.0–1.2 cm long, narrow, mucronate, many fertile mixed with a few sterile.

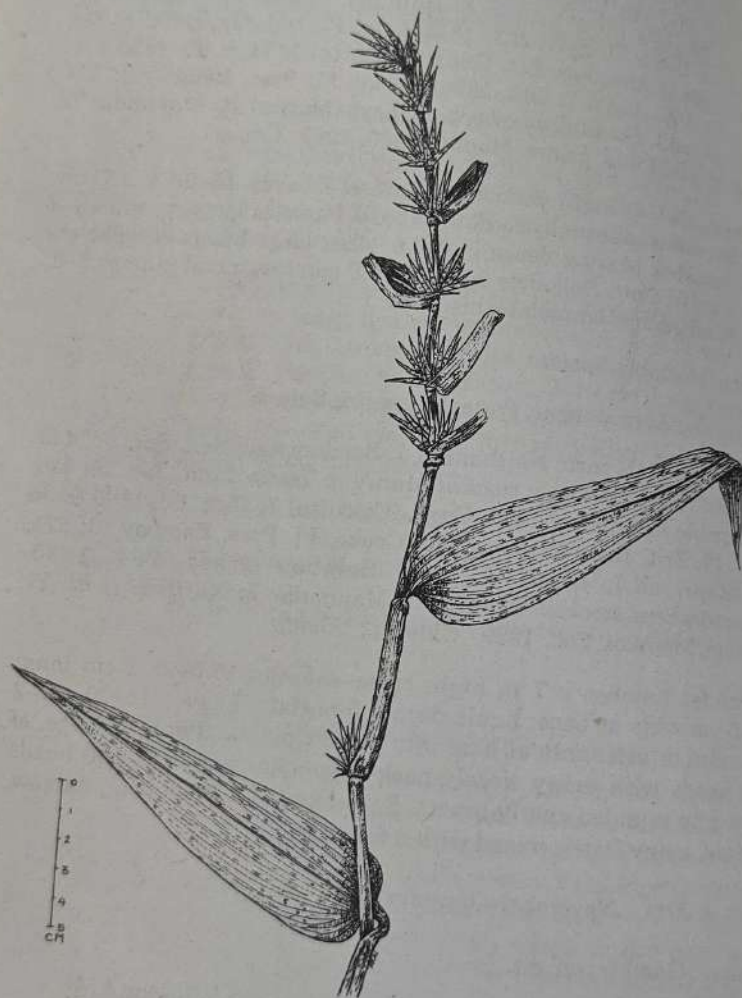
*Fls. & Frts.* : November–January.

*Illus.* : Gamble, *op. cit.*

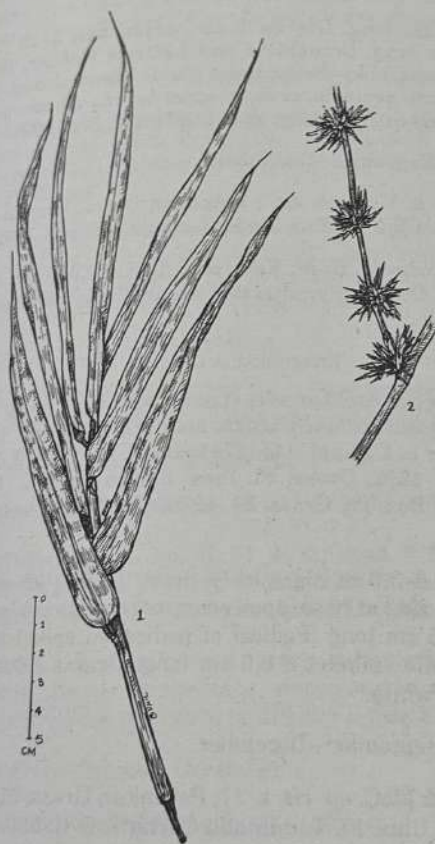
*Distrib.* : Jalgaon; Pune; Satara (Cooke, *op. cit.*); Sindhudurg.

#### RHYNCHELYTRUM Nees ('*Rhynchelythrum*')

*Rhynchelytrum repens* (Willd.) C.E. Hubb. in Kew Bull. 1934: 110. 1934; Bor, Grass. Ind. 355. 1960; T.A. Cope in Nasir & Ali, Fl. Pak.



*Pseudoxytenanthera ritcheyi* (Munro) Naithani



*Pseudoxytenanthera stocksii* (Munro) Naithani  
1. Leaf blades 2. Inflorescence (part)

143: 176. 1982. *Saccharum repens* Willd. Sp. Pl. 1: 322. 1793.  
*Tricholaena wightii* Nees & Arn. ex Steud. Syn. Pl. Glum. 1: 93. 1854.  
 Hook. f. Fl. Brit. India 7: 65. 1896; Cooke, Fl. Pres. Bombay 3: 441. 1938.  
 (Repr. ed.); Blatt. & McC. Bombay Grass. 176, t. 112. 1935.  
*Rhynchelytrum villosum* (Parl.) Chiov. in Ann. Ist Bot. Roma 8: 310.  
 1908; Bor, op. cit. 'Chota-Kaglu', 'Konkas'.

Herbs, c 45 cm long. Leaves linear, acuminate, 2-15 cm long.  
 Panicles 5-12 cm long; branchlets and pedicels slender, flexuous.  
 Spikelets c 1 cm long, silky-hairy; lower glume linear, obtuse, bearded  
 at base; upper glume ovate-lanceolate; upper lemma elliptic-oblong, c  
 0.25 cm long. Grains c 0.5 cm long, oblong-ellipsoid, brownish.

Fls. & Frts. : September-December.

Illus. : Blatt. & McC. op. cit. ; Patunkar, Grass. Marathw. 178, f.  
 55. 1980; Matthew, Illus. Fl. Tamilnadu Carnatic 2: tt. 924 & 925. 1982.

Distrib. : Introduced. Beed; Kolhapur; Konkan (Blatt. & McC. op.  
 cit.); Pune; Satara. Commonly cultivated in gardens in Bombay.

#### ROTTBOELLIA L. f.

*Rottboellia cochinchinensis* (Lour.) W.D. Clayton in Kew Bull.  
 35: 817. 1981. *Stegosia cochinchinensis* Lour. Fl. Cochinch. 1: 51. 1790.  
*Rottboellia exaltata* L. f. Suppl. 114. 1781 non (L.) L. f. 1779; Hook. f. Fl.  
 Brit. India 7: 156. 1896; Cooke, Fl. Pres. Bombay 3: 472. 1958 (Repr.  
 ed.); Blatt. & McC. Bombay Grass. 38. 1935; Bor, Grass. Ind. 206. 1960.  
 'Bura', 'Bursali'.

Perennials, 1.8-3.0 m high, leafy, erect. Leaves 25-40 x 0.8-2.0  
 cm, linear and tapering at base, apex acuminate, scabrid along margins.  
 Spikes terete, c 15 cm long. Pedicel of pedicelled spikelet fused with  
 rhachis-joint; sessile spikelet c 0.6 cm long. Grains c 0.45 x 0.3 cm,  
 ovoid, compressed, white.

Fls. & Frts. : September-December.

Illus. : Blatt. & McC. op. cit. t. 27; Patunkar, Grass. Marathw. 92, f.  
 28. 1980; Matthew, Illus. Fl. Tamilnadu Carnatic 2: tt. 926 & 927. 1982.

Distrib. : Akola; Amaravati; Aurangabad; Beed; Buldhana;  
 Kolhapur; Nagpur; Osmanabad; Parbhani; Pune; Sangli; Satara; Thane  
 (Blatt. & McC. op. cit.); Yavatmal.

Notes. : According to W.D. Clayton (op. cit.) *R. exaltata* (L.) L. f.  
 1779 was based on *Aegilops exaltata* L. (*Ophiuros exaltatus* (L.) O.

Ktze.) but was acco  
 realised his mistake  
*R. corymbosa* L. f. fo  
 earlier figure. Howe  
 as per the provision  
 discarded as a later  
 next available epith

**Saccharum s**  
 Brit. India 7: 118.  
 ed.); Blatt. & McC.  
 'Bagberi', 'Kamisi'.

Herbs, perenn  
 Leaves 30-60 x 0  
 fimbriate mouth;  
 silky hairy. Spikel

Fls. & Frts. :

Illus. : Blatt.  
 29. 1980; Matthew

Distrib. : Co

#### CULTIVAT

**S. officinal**  
 1896; Cooke, Fl.  
 Bombay Grass. 4

Annuals, 1  
 Leaves rigid, 1  
 pyramidal, spre

Fls. & Frts

Distrib. : C

**S. ravenn**  
 Grass. 50. 1935  
 Pl. ed. 2. 1481.  
 1812; Hook. f.  
 466. 1958 (Rep  
 122.

Ktze.) but was accompanied by a figure of a different species. L. f. realised his mistake and corrected it in 1781 by proposing a new name, *R. corymbosa* L. f. for *A. exaltata* and retaining *R. exaltata* L. f. for the earlier figure. However, such retrospective correction is not permissible as per the provisions of I.C.B.N. and *R. exaltata* L. f. 1781 has to be discarded as a later homonym. W.D. Clayton (*op. cit.*) has selected the next available epithet and has effected the combination.

## SACCHARUM L.

**Saccharum spontaneum** L. Mant. Alt. 2: 183. 1771; Hook. f. Fl. Brit. India 7: 118. 1896; Cooke, Fl. Pres. Bombay 3: 465. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 45. 1935; Bor, Grass. Ind. 214. 1960. 'Bagberti', 'Kamisi'.

Herbs, perennial, rhizomatous, erect, tufted, up to 2.5 m high. Leaves 30–60 x 0.3–0.5 cm, narrowly linear; sheaths smooth with fimbriate mouth; ligules ovate, membranous. Panicles large, silvery silky hairy. Spikelets 0.3–0.4 cm long, lanceolate.

Fls. & Frts. : September–March.

Illus. : Blatt. & McC. *op. cit.* t. 31; Patunkar, Grass. Marathw. 94, f. 29. 1980; Matthew, Illus. Fl. Tamilnadu Carnatic 2: tt. 928 & 929. 1982.

Distrib. : Common in all districts.

## CULTIVATED SPECIES :

**S. officinarum** L. Sp. Pl. 54. 1753; Hook. f. Fl. Brit. India 7: 118. 1896; Cooke, Fl. Pres. Bombay 3: 466. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 46. 1935; Bor, Grass. Ind. 212. 1960. 'Sherdi', 'Us'.

Annuals, 1–2 m tall, stout, erect; culms cylindric, many noded. Leaves rigid, linear-lanceolate, drooping at tip. Panicles large, pyramidal, spreading. Spikelets with silky white hairs.

Fls. & Frts. : October–December.

Distrib. : Cultivated throughout the State.

**S. ravennae** (L.) Murr. Syst. Veg. 88. 1774; Blatt. & McC. Bombay Grass. 50. 1935; Bor, Grass. Ind. 213. 1960. *Andropogon ravennae* L. Sp. Pl. ed. 2. 1481. 1763. *Erianthus ravennae* (L.) P. Beauv. Ess. Agrost. 14. 1812; Hook. f. Fl. Brit. India 7: 121. 1896; Cooke, Fl. Pres. Bombay 3: 466. 1958 (Repr. ed.); Bor, *op. cit.* 151. *E. elephantinus* Hook. f. *op. cit.* 122.

Gigantic tufted grasses, c 6 m tall. Leaves 60-90 x 2.5-6.2 cm, linear, scaberulous on both surfaces, margins scabrid; sheaths hairy; ligule a narrow silky-hairy band. Panicles oblong, 30-90 cm long, erect or inclined, clothed with silky hairs. Spikelets pale, c 0.5 cm long, linear-lanceolate.

Fls. & Frts. : December.

Illus. : T.A. Cope in Nasir & Ali, Fl. Pak. 143: 267, f. 28. 1982.

Distrib. : Cultivated. Pune.

#### SACCIOLEPIS Nash

- |   |     |                       |
|---|-----|-----------------------|
| 1. Spikelets subglobose, blunt  | ... | <i>S. myosuroides</i> |
| 1. Spikelets obliquely lanceolate, tips acute :   |     |                       |
| 2. Culms robust, usually spongy below; lower glume less than half the length of spikelets; spikelets 0.4-0.5 cm long, usually in interrupted, crowded fascicles | ... | <i>S. interrupta</i>  |
| 2. Culms slender, never spongy; lower glume half as long as spikelets; spikelets 0.25-0.35 cm long, in continuous pseudo-spikes                                 | ... | <i>S. indica</i>      |

*Sacciolepis indica* (L.) A Chase in Proc. Biol. Soc. Wash. 21: 8. 1908; Blatt. & McC. Bombay Grass. 166. 1935; Bor, Grass. Ind. 357. 1960. *Aira indica* L. Sp. Pl. 1753 in "Errata". *Panicum indicum* L. Mant. 184. 1771 non Mill. 1768; Hook. f. Fl. Brit. India 7: 41. 1896.

- |                                   |     |                        |
|-----------------------------------|-----|------------------------|
| 1. Pedicels short; scales present | ... | var. <i>indica</i>     |
| 1. Pedicels longer; scales absent | ... | var. <i>intermedia</i> |

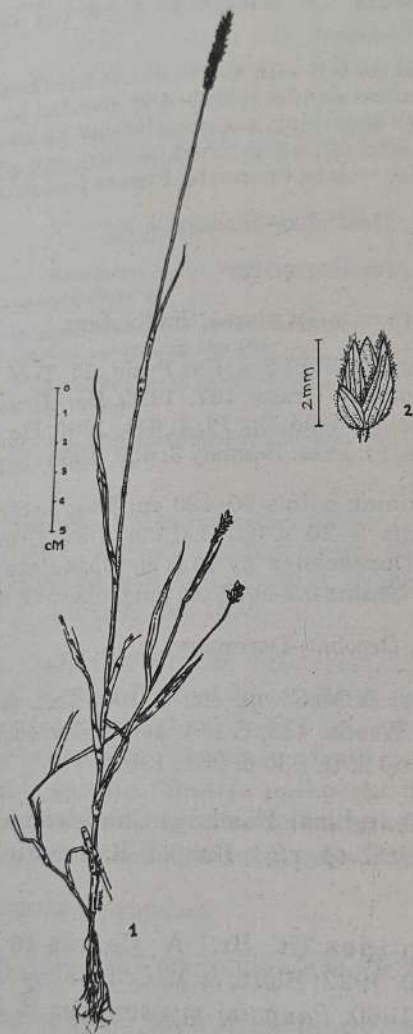
#### var. *indica*.

Herbs, culms 15-50 cm high, ascending. Leaves 2.5-4.0 x 0.2-0.4 cm, lanceolate. Spikelets lanceolate, acute, 0.2-0.3 cm long, green with a purple tip; lower glume c 0.15 cm long; upper glume twice as long as lower glume; lower lemma narrower than upper glume.

Fls. & Frts. : September-December.

Illus. : Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 818. 1988.

Distrib. : Bhandara; Chandrapur; Kolhapur; Nagpur; Pune; Ratnagiri; Satara; Sindhudurg.



*Sacciolepis indica* (L.) A. Chase var. *indica*.  
1. Habit 2. Spikelet

Notes. : Cooke (3: 456) excluded this species, *Panicum indicum* L. for lack of any evidence regarding its existence in the Bombay Presidency. Blatter & McCann (1928) established it based on specimens collected from S.M. Country and N. Kanara.

var. *intermedia* S.M. Almeida in J. Bombay nat. Hist. Soc. 83: 184, t. 2, f. 4. 1986.

Herbs, 45–60 cm tall with 4–5 branches from base having number of fibrous roots; culms slender with 3–4 internodes, nodes brown, hairy. Leaves linear, with sheathing leaf base, lamina 12–15 cm long, acicular. Inflorescence of terminal, unbranched, solitary, compressed, paniculate spikes. Spikelets lanceolate, bracteate. Florets unisexual.

Fls. & Frts. : December–January.

Illus. : S.M. Almeida, *op. cit.*

Distrib. : Rare in moist places. Sindhudurg.

*S. interrupta* (Willd.) Stapf in Prain, Fl. Trop. Afr. 9: 757. 1920; Blatt. & McC. Bombay Grass. 167. 1935; Bor, Grass. Ind. 358. 1960. *Panicum interruptum* Willd. Sp. Pl. 1: 341. 1798; Hook. f. Fl. Brit. India 7: 40. 1896; Cooke, Fl. Pres. Bombay 3: 450. 1958 (Repr. ed.).

Herbs, perennial; culms 90–120 cm long, ascending from floating rootstocks. Leaves 8–20 x 0.5–1.0 cm, linear, margins smooth or scaberulous. Inflorescence cylindric. Spikelets 0.4–0.5 cm long, ovoid–lanceolate. Grains 0.2–0.25 cm long, obovoid, apiculate.

Fls. & Frts. : October–December.

Illus. : Blatt. & McC. *op. cit.* t. 108; Tad. & Venkatanarayana, Handb. S. Indian Weeds, 436, f. 174. 1955 (Rev. ed.); Matthew, Illus. Fl. Tamilnadu Carnatic 2: tt. 930 & 931. 1982.

Distrib. : Bhandara; Bombay; Chandrapur; Nagpur; Nanded; Nasik (Blatt. & McC. *op. cit.*); Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

*S. myosuroides* (R. Br.) A. Camus in Lecomte, Fl. Gen. Indo-Chine 7: 460. 1922; Blatt. & McC. Bombay Grass. 166. 1935; Bor, Grass. Ind. 358. 1960. *Panicum myosuroides* R. Br. Prodr. 189. 1810; Hook. f. Fl. Brit. India 7: 42. 1896; Cooke, Fl. Pres. Bombay 3: 451. 1958 (Repr. ed.). 'Kara-lom', 'Pokalia'.

Annuals, 20–100 cm tall, erect. Leaves 10–20 x 0.15–0.3 cm, linear, sparsely hairy above, glabrous beneath. Spikes 2–8 cm long. Spikelets

c 0.25 cm long, ovoid; upper glume c 0.2 cm long, ovate, 7  
0.2 cm long, ovate, 7  
Grains c 0.1 cm long, c

Fls. & Frts. : Nov

Illus. : Blatt. & 181, t. 56. 1980; Ma 819. 1988.

Distrib. : Char Sindhudurg; Yavatn

1. Awns c 0.3 cm long; exerted from subt
1. Awns up to 0.15 cm racemes not exert
2. Leaves linear of racemes 0.
2. Leaves taper 0.4–0.6 cm lo

### Schizachyr

Junghn. 359. 185 Ind. 215. 1960. A 1788; Hook. f. Fl.

Herbs, ann Sheaths compr Leaves oblong-l rounded or sho concealed in r 0.32–0.35 cm lo aristulate glum

Fls. & Frt

Illus. : M

Distrib. Amaravati; B

### S. exile

Grass. Ind. 2 Hook. f. Fl. B

c 0.25 cm long, ovoid; lower glumes c 0.12 cm long, ovate, 5-nerved, upper glume c 0.2 cm long, ovate, 9-nerved, apex acute; lower lemma c 0.2 cm long, ovate, 7-nerved, upper lemma c 0.15 cm long, elliptic. Grains c 0.1 cm long, ellipsoid-oblong.

*Fls. & Frts.* : November–February.

*Illus.* : Blatt. & McC. *op. cit.* t. 107; Patunkar, Grass. Marathw. 181, t. 56. 1980; Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 819. 1988.

*Distrib.* : Chandrapur; Nanded; Osmanabad; Raigad; Ratnagiri; Sindhudurg; Yavatmal.

#### SCHIZACHYRIUM Nees

- |   |                             |
|---|-----------------------------|
| 1. Awns c 0.3 cm long; plants green at maturity; racemes long exerted from subtending sheaths             | ... <i>S. paranjpyeanum</i> |
| 1. Awns up to 0.15 cm long; plants turning red at maturity; racemes not exerted from subtending sheaths : |                             |
| 2. Leaves linear, rounded at apex to an obtuse tip; joints of racemes 0.2–0.3 cm long                     | ... <i>S. brevifolium</i>   |
| 2. Leaves tapering to an acuminate tip; joints of racemes 0.4–0.6 cm long                                 | ... <i>S. exile</i>         |

**Schizachyrium brevifolium** (Swartz) Nees ex Buese in Miq. Pl. Junghn. 359. 1854; Blatt. & McC. Bombay Grass. 98. 1935; Bor, Grass. Ind. 215. 1960. *Andropogon brevifolius* Swartz, Prodr. Veg. Ind. Occ. 26. 1788; Hook. f. Fl. Brit. India 7: 165. 1896.

Herbs, annual; culms 10–50 cm tall, erect, sparingly branched. Sheaths compressed, keeled, 0.75–2.25 cm long; ligule membranous. Leaves oblong-lanceolate, 1.5–5.0 x 0.35–0.7 cm, rounded at base, apex rounded or shortly mucronate. Racemes slender, 0.75–2.0 cm long, concealed in narrow spathe. Sessile spikelets linear-lanceolate, 0.32–0.35 cm long, brownish, awned; pedicelled spikelets represented by aristulate glumes. Grains 0.18–0.2 cm long, cylindric, brown.

*Fls. & Frts.* : August–November.

*Illus.* : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 932. 1982.

*Distrib.* : Occasional in open grasslands and on hill slopes. Amaravati; Bhandara; Buldhana; Jalgaon; Nanded; Parbhani.

**S. exile** (Hochst.) Pilger in Engl. Bot. Jahrb. 54: 284. 1917; Bor, Grass. Ind. 216. 1960. *Andropogon exilis* Hochst. in Flora 27: 241. 1884; Hook. f. Fl. Brit. India 7: 166. 1896.

Herbs, annual; culms 20–100 cm tall, branched. Sheaths compressed, keeled, 0.75–3.5 cm long; ligule membranous, oblong. Leaves 4–13 x 0.2–0.25 cm, linear, glabrous or sparsely pilose, apex acuminate. Racemes 2.5–4.5 cm long, concealed in a narrow spathe. Sessile spikelets linear-lanceolate, 0.6–0.7 cm long, compressed, awned, pedicelled spikelets reduced to aristate glumes. Grains narrow, cylindric, broad at base.

*Fls. & Frts.* : August–November.

*Illus.* : Patunkar, Grass. Marathw. 97, f. 30. 1980.

*Distrib.* : Rare in open grasslands. Chandrapur; Nanded; Parbhani.

**S. paranjpyeanum** (Bhide) Raiz. & Jain in Proc. Ind. Sci. Congr. Abstracts 3: 130. 1953; Bor, Grass. Ind. 216. 1960; Kulkarni & Wadhwa in J. Bombay nat. Hist. Soc. 70: 238. 1973. *Andropogon paranjpyeanus* Bhide in J. Proc. Asiat. Soc. Bengal (N.S.) 7: 514. 1911. *Eremopogon paranjpyeanus* (Bhide) Blatt. & McC. in J. Bombay nat. Hist. Soc. 32: 427. 1927 & Bombay Grass. 97. 1935.

Annuals, 20–30 cm tall, tufted, nodes bearded. Leaves 4–8 x 0.2–0.3 cm, linear, hairy on both sides, margins bulbous based hairy or minutely scaberrulous. Racemes 2–3 cm long. Sessile spikelets c 0.35 cm long, awns c 2.6 cm long; lower glumes oblong-elliptic, 3-nerved, rounded on back and glabrous, tip rounded, hairy on either side of tip along margin, upper glumes c 0.4 cm long, elliptic, glabrous, 1-nerved, apex acute; pedicelled spikelets c 0.5 cm long, flat.

*Fls. & Frts.* : October–November.

*Illus.* : Kulkarni & Wadhwa *op. cit.* t. 4; Kulkarni, Fl. Sindhudurg 556, figs. 1–8. 1987.

*Distrib.* : Rare on open, rocky plains along ghats. Kolhapur (Salunkhe, 1995); Sindhudurg.

#### SCHOENEFELDIA Kunth

**Schoenefeldia gracilis** Kunth, Rev. Gram. 1: 283, t. 53. 1830; Bor, Grass. Ind. 474. 1960. *Chloris pallida* (Edgew.) Hook. f. Fl. Brit. India 7: 289. 1896; Blatt. & McC. Bombay Grass. 252. 1935. *C. myosuroides* Hook. f. *op. cit.* 290.

Herbs, annuals; culms 25–45 cm long, simple or branched, almost filiform. Leaves 15–20 cm long, narrowly linear, flaccid; ligule of few

hairs. Spikes 1–3, spikelets c 0.2 cm long.

*Fls. & Frts.* : S

*Illus.* : Blatt. &

*Distrib.* : Few (Blatt. & McC. *op.*

1. Lower glume of s deep longitudinal

1. Lower glume wit

2. Lower glum shallowly d

2. Lower glum

3. Sessil ciliate lance

3. Sessil ciliate narrow setae

#### Sehima

Blatt. & McC 'Paunat', 'She

Annuals, linear. Spike pedicelled spil

*Fls. & F*

*Distrib.*

Thane.

#### S. ner

Blatt. & McC

*Andropogon*

Berlin, Neu

1810; Hook

482. 1958 (

hairs. Spikes 1-3, 7.5-12.5 x 0.5 cm, digitate, golden-yellow, erect; spikelets c 0.2 cm long, narrow, sessile. Grains slender, acute.

Fls. & Frts. : September-November.

Illus. : Blatt. & McC. op. cit. t. 167.

Distrib. : Few in moist clayey soils. Amaravati; Chandrapur; Pune (Blatt. & McC. op. cit.).

#### SEHIMA Forssk.

1. Lower glume of sessile spikelets rounded on back, with a deep longitudinal slit-like groove ... *S. sulcatum*
1. Lower glume without a slit but grooved deeply or shallowly :
  2. Lower glume of sessile spikelet almost flat or dorsally shallowly depressed ... *S. notatum*
  2. Lower glume more or less deeply grooved :
    3. Sessile spikelets 0.8-0.9 cm long; awn minutely ciliate along spiral; lower glume of pedicelled spikelet lanceolate-acuminate, slightly 2-toothed; perennials ... *S. nervosum*
    3. Sessile spikelets 0.9-1.4 cm long; awn distinctly ciliate along spiral; lower glume of pedicelled spikelet narrowly lanceolate, long-acuminate, with 2 long setaceous teeth; annuals ... *S. ischaemoides*

*Sehima ischaemoides* Forssk. Fl. Aegypt.-Arab. 178. 1775; Blatt. & McC. Bombay Grass. 2.1935; Bor, Grass. Ind. 218. 1960. 'Paunat', 'Sheda'.

Annuals, c 45 cm high, weak, tufted. Leaves 4-20 x 0.15-0.3 cm, linear. Spikes 3.5-6.0 cm long. Sessile spikelets 0.9-1.1 cm long; pedicelled spikelets c 1.2 cm long. Grains c 0.35 cm long.

Fls. & Frts. : September-December.

Distrib. : Akola; Aurangabad; Beed; Parbhani; Pune; Satara; Thane.

*S. nervosum* (Rottl.) Stapf in Prain, Fl. Trop. Afr. 9: 36. 1917; Blatt. & McC. Bombay Grass. 21. 1935; Bor, Grass. Ind. 218. 1960. *Andropogon nervosus* Rottl. apud. Willd. in Verh. Ges. Naturf. Freund. Berlin, Neue Schr. 4: 218. 1806. *Ischaemum laxum* R. Br. Prodr. 205. 1810; Hook. f. Fl. Brit. India 7: 136. 1896; Cooke, Fl. Pres. Bombay 2: 482. 1958 (Repr. ed.). 'Paunat', 'Pavanya', 'Pavna', 'Sheda'.

Perennials, 60–90 cm high, tufted, erect. Leaves 15–30 x 0.2–0.4 cm, linear, flat; sheaths glabrous or sparsely hairy; ligule a tuft of silky hairs. Racemes solitary, 6–10 cm long. Sessile spikelets c 1 cm long, linear-oblong; pedicelled spikelets 0.8–1.2 cm long, ovoid-oblong. Grains oblong, brown.

*Fls. & Frts.* : September–October.

*Illus.* : Blatt. & McC. *op. cit.* t. 14; Matthew, *Illus. Fl. Tamilnadu* Carnatic 2: tt. 933 & 934. 1982.

*Distrib.* : Ahmednagar; Akola; Amaravati; Aurangabad; Buldhana; Chandrapur; Dhule; Kolhapur; Nagpur; Nasik; Osmanabad; Parbhani; Pune; Raigad; Sangli; Satara (Blatt. & McC. *op. cit.*); Yavatmal.

**S. notatum** (Hack.) A. Camus in Bull. Mus. Hist. Nat. Paris 27: 373. 1921; Bor, Grass. Ind. 218. 1960. *Ischaemum notatum* Hack. in DC. Monogr. Phan. 6: 246. 1889; Hook. f. Fl. Brit. India 7: 138. 1896. 'Pavana'.

Herbs, perennial; culms 50–120 cm tall, erect, simple. Sheaths 4–14 cm long; ligule membranous, densely hairy. Leaves 10–40 x 0.3–0.6 cm, hispid on both surfaces, acuminate. Racemes terminal, 9–15 cm long. Sessile spikelets lanceolate-acuminate, 1.2–1.3 cm long, awned, grains ellipsoid; pedicelled spikelets lanceolate-acuminate, 1.25–1.3 cm long, 9-nerved, grains ellipsoid.

*Fls. & Frts.* : August–December.

*Illus.* : Patunkar, Grass. Marathw. 102, f. 31. 1980.

*Distrib.* : Rare in open grasslands and on hill slopes. Aurangabad; Nanded; Prabhani.

**S. sulcatum** (Hack.) A. Camus in Bull. Mus. Hist. Nat. Paris 27: 373. 1921; Blatt. & McC. Bombay Grass. 23. 1935; Bor, Grass. Ind. 219. 1960. *Ischaemum sulcatum* Hack. in DC. Monogr. Phan. 6: 248. 1839; Hook. f. Fl. Brit. India 7: 137. 1896; Cooke, Fl. Pres. Bombay 3: 483. 1958 (Repr. ed.). 'Pavna', 'Sheda'.

Perennials, 5–120 cm high, tufted. Leaves 8–28 x 0.2–0.5 cm, linear, scabrid along margins, apex acuminate. Spikes c 6 cm long. Sessile spikelets 0.8–1.0 cm long; pedicelled spikelets c 0.8 cm long. Grains oblong.

*Fls. & Frts.* : August–November.

*Illus.* : Blatt. & McC. *op. cit.* t. 15.

FL

*Distrib.* : Akola; Kolhapur; Nanded; Nashik; Sholapur; Yavatmal.

1. Inflorescence a dense, spreading panicle; leaf longitudinal nerves:

2. Perennials

2. Annuals

1. Inflorescence a cylindrical spikeform panicle; bristles retrorse

3. Bristles retrorse

3. Bristles antrorse

4. Inflorescence

4. Inflorescence lobed below

5. Annuals

5. Perennials

**Setaria for**

1896; Bor, Grass.

Syn. Pl. Glum. 1: 1

Herbs, perennial; culms compressed, 9–10 cm high, fimbriate. Leaves hispid, scabrid above, to narrowly pinnate. Grains 0.27–0.3 cm long.

*Fls. & Frts.*

*Distrib.* : banks. Aurangabad.

**S. homo**

78. 1919; Bor,

Pl. Glum. 1: 1

2: 919. 1908 [

Herbs, perennial; leaves elliptic; inflorescence

*Distrib.* : Akola; Amaravati; Aurangabad; Chandrapur; Dhule; Kolhapur; Nanded; Nasik; Osmanabad; Parbhani; Pune; Sangli; Satara; Sholapur; Yavatmal.

SETARIA P. Beauv. (*nom. cons.*)

- |   |     |                        |
|---|-----|------------------------|
| 1. Inflorescence a dense or rather loose, narrow or widely spreading panicle; leaves folded fan-fashion between the longitudinal nerves : | ... | <i>S. plicata</i>      |
| 2. Perennials   | ... | <i>S. homonyma</i>     |
| 2. Annuals  |     |                        |
| 1. Inflorescence a cylindric and dense or sometimes lobed spiciform panicle; blades folded or flat :                                      |     |                        |
| 3. Bristles retrorsely barbed   | ... | <i>S. verticillata</i> |
| 3. Bristles antrorsely barbed :   |     |                        |
| 4. Inflorescence a cylindric false spike  | ... | <i>S. pumila</i>       |
| 4. Inflorescence a narrow panicle, sometimes loosely lobed below and tapering upwards :   |     |                        |
| 5. Annuals; spikelets up to 0.2 cm long   | ... | <i>S. intermedia</i>   |
| 5. Perennials; spikelets 0.25–0.3 cm long   | ... | <i>S. forbesiana</i>   |

*Setaria forbesiana* (Nees ex Steud.) Hook. f. Fl. Brit. India 7: 81. 1896; Bor, Grass. Ind. 360. 1960. *Panicum forbesianum* Nees ex Steud. Syn. Pl. Glum. 1: 98. 1854.

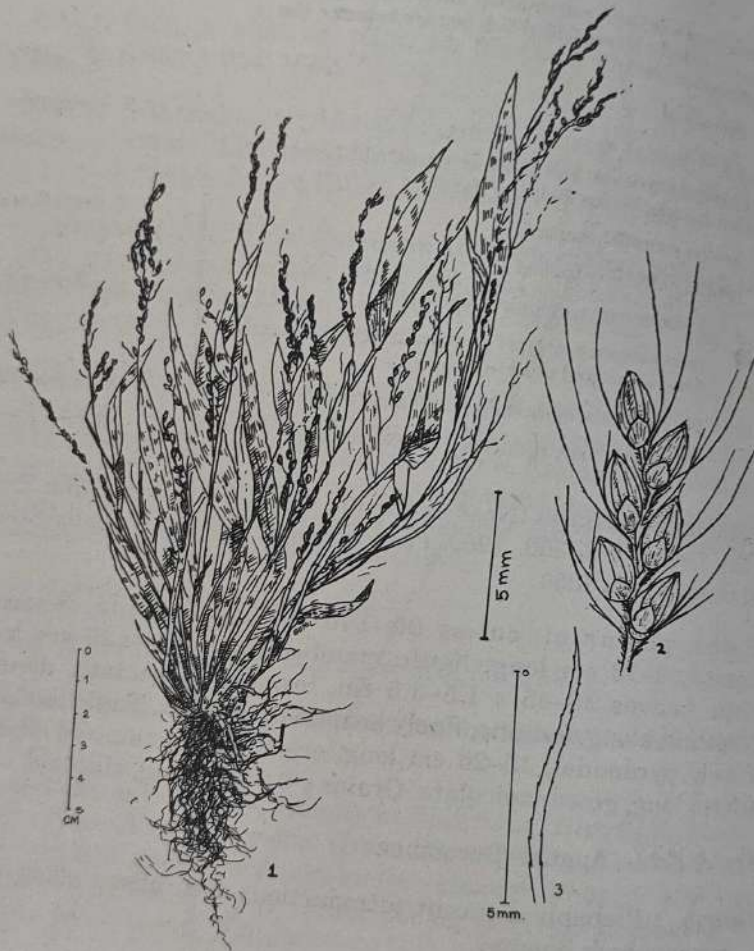
Herbs, perennial; culms 90–140 cm tall, simple. Sheaths compressed, 9–13 cm long; ligule membranous, 0.3–0.35 cm long, fimbriate. Leaves 20–45 x 1.5–3.5 cm, broadly lanceolate, densely hispid, scabrid along margins, finely acuminate at apex. Panicles oblong to narrowly pyramidal, 15–26 cm long, erect. Spikelets ovoid-oblong, 0.27–0.3 cm long, green, apiculate. Grains c 0.25 cm long, ellipsoid.

*Fls. & Frts.* : August–December.

*Distrib.* : Probably a recent introduction, naturalised along river banks. Aurangabad; Bombay.

*S. homonyma* (Steud.) Chiov. in Nuovo Giorn. Bot. Ital. n.s. 26: 78. 1919; Bor, Grass. Ind. 361. 1960. *Panicum homonymum* Steud. Syn. Pl. Glum. 1: 48. 1854. *Setaria rhachitricha* T. Cooke, Fl. Pres. Bombay 2: 919. 1908 [3: 435. 1958 (Repr. ed.)].

Herbs, annual or perennial, 25–35 cm tall; culms slender, tufted. Leaves elliptic-lanceolate, glabrous or sparsely hairy on both sides. Inflorescence 5–10 cm long; spikes 2.0–2.5 cm long. Spikelets 0.2–0.25



*Setaria homonyma* (Stued) Chiov.  
1. Habit 2. Spikelet 3. Barbed bristle

cm long, ellips  
upper glume 3-

Fls. & Fr

Distrib. :

Notes. :  
of Woodrow, &  
Blatter & Mc  
occurrence in

*S. inter*  
India 7: 79.  
Blatt. & McC  
(Repr. ed.); T  
tomentosum  
Kunth, Rev.  
'Pandar'.

Herbs,  
0.5-1.0 cm,  
3-16 cm lon  
Grains plan

Fls. &

Illus. :  
Tamilnadu  
Ugemuge, F

Distrib

Notes.  
Gram. 1: :  
*Panicum to*  
*S. interme*  
Sp. 47. 182  
of I.C.B.N.  
acceptable

*S. pl*  
1958 (Rep  
Ind. 364. :  
Brit. India

Herb  
Panicles

cm long, ellipsoid; lower glume less than 1/2 the length of spikelet, upper glume 3-5-nerved; upper lemma rugose.

Fls. & Frts. : September-October.

Distrib. : Rare. Kolhapur.

Notes. : Cooke (op. cit.) had included this species on the authority of Woodrow, although he had not seen any specimen from this area. Blatter & McCann (1928) too had not seen this, hence they doubted its occurrence in this region.

*S. intermedia* R. & S. Syst. Veg. 2: 489. 1817; Hook. f. Fl. Brit. India 7: 79. 1896; Cooke, Fl. Pres. Bombay 3: 436. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 174. 1935; Bor, Grass. Ind. App. II. 1973 (Repr. ed.); T.A. Cope in Nasir & Ali, Fl. Pak. 143: 183. 1982. *Panicum tomentosum* Roxb. Fl. Ind. 1: 303. 1820. *Setaria tomentosa* (Roxb.) Kunth, Rev. Gram. 1: 47. 1829; Bor, Grass. Ind. 365. 1960. 'Landgar', 'Pandar'.

Herbs, 60-90 cm high, erect or ascending, tufted. Leaves 6-30 x 0.5-1.0 cm, linear-lanceolate, sparsely hairy on both sides. Panicles 3-16 cm long. Spikelets 0.1-0.2 cm long, ovoid; upper lemma rugose. Grains plano-convex.

Fls. & Frts. : August-January.

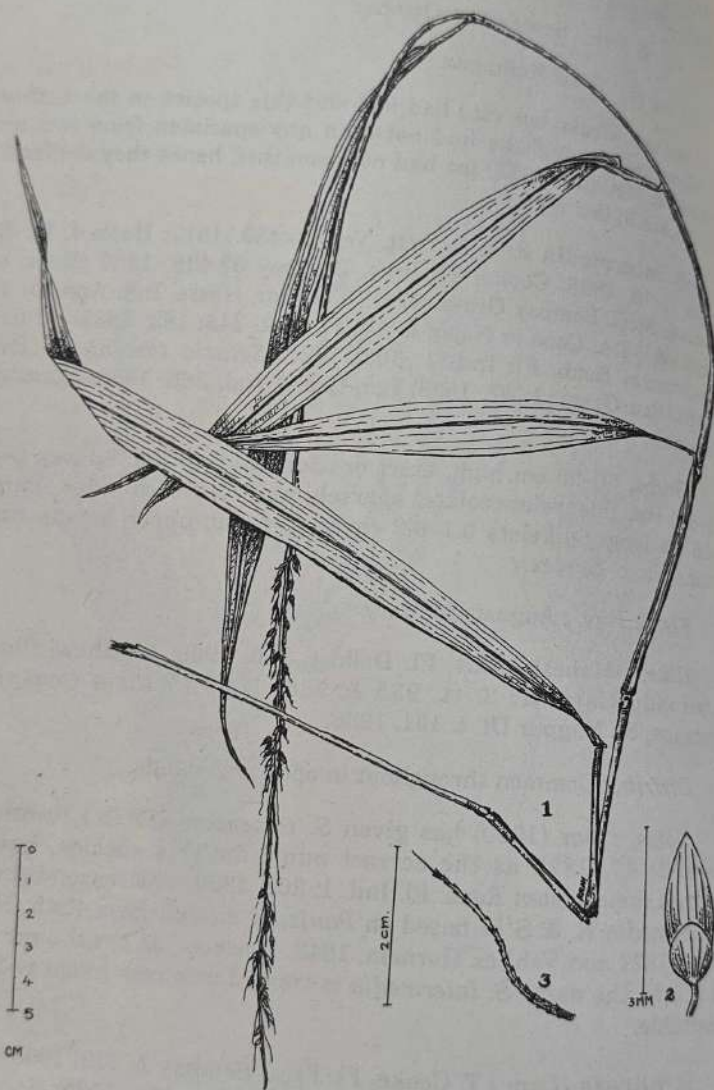
Illus. : Mahesh. Illus. Fl. Delhi f. 250. 1960; Matthew, Illus. Fl. Tamilnadu Carnatic 2: tt. 935 & 936. 1982 (*Setaria tomentosa*); Ugemuge, Fl. Nagpur Dt. t. 191. 1986.

Distrib. : Common throughout in open grasslands.

Notes. : Bor (1960) has given *S. tomentosa* (Roxb.) Kunth, Rev. Gram. 1: 47. 1829 as the correct name for this species, based on *Panicum tomentosum* Roxb. Fl. Ind. 1: 303. 1820. The reason being that *S. intermedia* R. & S. is based on *Panicum intermedium* Roth, Nov. Pl. Sp. 47. 1821 non Vahl ex Hornem. 1813. However, as per the provisions of I.C.B.N. the name *S. intermedia* is treated as a new name and hence acceptable.

*S. plicata* (Lam.) T. Cooke, Fl. Pres. Bombay 2: 919. 1908 [3: 434. 1958 (Repr. ed.)]; Blatt. & McC. Bombay Grass. 171. 1935; Bor, Grass. Ind. 364. 1960. *Panicum plicatum* Lam. Encycl. 4:736. 1797; Hook. f. Fl. Brit. India 7:55. 1896.

Herbs, c 2 m high. Leaves linear-lanceolate, 15-25 x 2-3 cm. Panicles effuse, spreading, 15-25 cm long; rhachis angular, scabrid.



*Setaria plicata* (Lam.) T. Cooke  
1. Habit 2. Spikelet 3. Bristle

Spikelets ovoid, 0.3–0.5  
long, 5-nerved, upper  
tinged with purple; up

Fls. & Frts. : Oct

Distrib. : Bomba  
1995); Konkan (Cooke

*S. pumila* (Poi  
Nasir & Ali, Fl. Pak  
Encycl. 4: 273. 1816  
Hubb. in Kew Bull  
*glauca non* (L.) P.  
Cooke, Fl. Pres. Bor  
Grass. 172. 1935; B

Herbs, 20–60  
Leaves 3–10 x 0.2–  
0.2–0.3 cm long,  
Grains plano-conv

Fls. & Frts. :

Illus. : Tad.  
175. 1955 (Rev. )  
(*Setaria pallide-*  
4: t. 823. 1988.

Distrib. : C  
fields.

*S. vertici*  
Fl. Brit. India  
ed.); Blatt. &  
1960. *Panicum*

Herbs, c  
1.2–4.0 cm, l  
Spikelets c 0.  
Grains 0.2–0.

Fls. & F

Illus. :  
Hepper, Fl.

Spikelets ovoid, 0.3–0.35 cm long; lower glume orbicular-ovate, c 0.1 cm long; 5-nerved, upper glume broadly ovate, c 0.25 cm long, 7-nerved, tinged with purple; upper lemma c 0.35 cm long.

Fls. & Frts. : October–November.

Distrib. : Bombay (Blatt. & McC. *op. cit.*); Kolhapur (Salkunkhe, 1995); Konkan (Cooke, *op. cit.*); Satara.

*S. pumila* (Poir.) R. & S. Syst. Veg. 2: 891. 1817; T.A. Cope in Nasir & Ali, Fl. Pak. 143: 181. 1982. *Panicum pumilum* Poir. in Lam. Encycl. 4: 273. 1816. *Setaria pallide-fusca* (Schumach.) Stapf & C.E. Hubb. in Kew Bull. 1930: 259. 1930; Bor, Grass. Ind. 363. 1960. *S. glauca non* (L.) P. Beauv. 1812; Hook. f. Fl. Brit. India 7: 78. 1896; Cooke, Fl. Pres. Bombay 3: 435. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 172. 1935; Bor, *op. cit.* 360. 'Bindi', 'Kolara', 'Kolu', 'Kolwa'.

Herbs, 20–60 cm high, tufted; culms many, spreading, ascending. Leaves 3–10 x 0.2–0.5 cm, linear. Spikes 1.5–5.0 x 0.3–0.7 cm. Spikelets 0.2–0.3 cm long, ovoid or ellipsoid, subacute; upper lemma rugose. Grains plano-convex.

Fls. & Frts. : July–November.

Illus. : Tad. & Venkatanarayana, Handb. S. Indian Weeds, 438, f. 175. 1955 (Rev. ed.); Gilliland, Fl. Malaya 3: facing p. 151, t. 9. 1971 (*Setaria pallide-fusca*); Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 823. 1988.

Distrib. : Common throughout in open grasslands and cultivated fields.

*S. verticillata* (L.) P. Beauv. Ess. Agrost. 51, 178. 1812; Hook. f. Fl. Brit. India 7: 80. 1896; Cooke, Fl. Pres. Bombay 3: 436. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 174. 1935; Bor, Grass. Ind. 365. 1960. *Panicum verticillatum* L. Sp. Pl. ed. 2: 82. 1762. 'Danyani'.

Herbs, c 1 m high, erect, rooting at lower nodes. Leaves 8–20 x 1.2–4.0 cm, linear or linear-lanceolate. Panicles 2.5–9.5 cm long. Spikelets c 0.2 cm long, ovoid, subacute; upper lemma finely rugose. Grains 0.2–0.23 cm long, ellipsoid.

Fls. & Frts. : September–January.

Illus. : Mahesh. Illus. Fl. Delhi f. 239. 1966; W.D. Clayton in Hepper, Fl. W. Trop. Afr. 3(2): 422, f. 439. 1972; Matthew, Illus. Fl.

Tamilnadu Carnatic 2: t. 186, f. 57. 1980 & Further Illus. Fl. Tamilnadu  
Carnatic 4: t. 824. 1988.

*Distrib.* : Common in all districts.

#### CULTIVATED SPECIES :

**S. italica** (L.) P. Beauv. Ess. Agrost. 51, 170, 178. 1812; Hook. f. Pl. Brit. India 7: 78. 1896; Cooke, Fl. Pres. Bombay 3: 437. 1958 (Repr. ed. by Blatt. & McC. Bombay Grass. 175. 1935; Bor, Grass. Ind. 362. 1960. *Panicum italicum* L. Sp. Pl. 56. 1753. 'Kano', 'Rala'.

Erect annuals, 60–100 cm tall. Leaves 15–30 x 0.4–2.5 cm, linear-lanceolate, minutely scaberulous on both sides and along margin. Panicles 8–12 cm long, compact. Spikelets 0.25 cm long, ellipsoid; lower glumes c 0.05 cm long, ovate, 1-nerved, upper glumes c 0.15 cm long, ovate, glabrous, rounded.

*Fls. & Frts.* : September–February.

*Distrib.* ; Mostly cultivated. Ahmednagar; Akola; Amaravati; Aurangabad; Bhandara; Bombay (Cooke, *op. cit.*); Buldhana; Kolhapur; Nagpur; Parbhani; Pune; Ratnagiri; Sangli; Satara; Sindhudurg; Thane.

**S. viridis** (L.) P. Beauv. Ess. Agrost. 51, 171, 178. 1812; Hook. f. Fl. Brit. India 7: 80. 1896; Bor, Grass. Ind. 365. 1960. *Panicum viride* L. Syst. Nat. ed. 10. 2: 870. 1759. 'Rala'.

Herbs, 30–50 cm high, erect. Spikes 2.5–5.0 x 0.7–0.9 cm. Spikelets c 0.3 cm long. Grains orange-red at maturity.

*Fls. & Frts.* : September–October.

*Distrib.* : Cultivated (rarely met with as a weed in cultivated fields). Pune.

#### SORGHUM Moench. (*nom. cons.*)

1. Sheath-nodes glabrous or finely pubescent, not bearded :

2. Perennials without rhizomes or annuals

2. Perennials with well-developed more or less creeping rhizomes :

3. Sessile spikelets acuminate to acute; glumes subcoriaceous with somewhat papery tips; lower glume with keels ending without or with only obscure teeth

3. Sessile spikelets more or less obtuse; glumes coriaceous; lower glumes with keels ending in

... *S. arundinaceum*

... *S. controversum*

FLO

distinct minute  
apex a more or l

1. Sheath-nodes densely bearded
4. Sessile spikelets 0.4–0.6 cm long
4. Sessile spikelets 0.6–0.8 cm long
5. Sessile spikelet along involucre
5. Sessile spikelet and coarsely hairy

**Sorghum arundinaceum** (L.) Desv. Opl. 114. 1917; T.A. Cope in *arundinacea* Desv. Opl. Willd. Sp. Pl. 4: 906. India 7: 184. 1896. *Sorghum* Fl. Pres. Madras 1735. 246. 1960. *S. pugionifolium* *op. cit.* 223. *S. verticillatum* & McC. Bombay Grass

Herbs, annual. Sheaths 8–15 cm long 20–45 x 2.5–4.5 cm, linear-lanceolate. Panicles oblong-lanceolate. Spikelets ellipsoid-pedicelled spikelet unawned. Grains elliptic.

*Fls. & Frts.* : September–October.

*Illus.* : Bor, *op. cit.* Afr. 3(2): 469, f. 449.

*Distrib.* : Occasional in Nanded.

**S. controversum** (L.) Desv. Opl. 114. 1917; T.A. Cope in *arundinacea* Desv. Opl. Willd. Sp. Pl. 4: 906. India 7: 184. 1896. *Sorghum* Fl. Pres. Madras 1735. 246. 1960. *S. pugionifolium* *op. cit.* 223. *S. verticillatum* & McC. Bombay Grass

Perennials, 10–20 cm high, 0.5–2.0 cm, narrow-lanceolate, membranous, ciliate, 1–2 cm long, ovoid-lanceolate.

distinct minute teeth, forming with the sub-hyaline apex a more or less distinct 3-toothed tip

1. Sheath-nodes densely bearded : ... *S. halepense*
4. Sessile spikelets 0.4–0.55 cm long, 0.12–0.15 cm wide ... *S. nitidum*
4. Sessile spikelets 0.6–1.0 cm long, 0.15–0.3 cm wide :
5. Sessile spikelets ellipsoid-lanceolate, coarsely ciliate along involute margins of glumes, otherwise glabrous... *S. purpureo-sericeum*
5. Sessile spikelets elliptically flask-shaped, densely and coarsely hirsute with hairs ... *S. deccanense*

*Sorghum arundinaceum* (Desv.) Stapf in Prain, Fl. Trop. Afr. 9: 114. 1917; T.A. Cope in Nasir & Ali, Fl. Pak. 143: 297. 1982. *Rhaphis arundinacea* Desv. Opusc. 69. 1832 based on *Andropogon arundinaceus* Willd. Sp. Pl. 4: 906. 1805 non Berg. 1767. *A. stapfii* Hook. f. Fl. Brit. India 7: 184. 1896. *Sorghum stapfii* (Hook. f.) C.E.C. Fischer in Gamble, Fl. Pres. Madras 1735. 1934 [3: 1203. 1957 (Repr. ed.)]; Bor, Grass. Ind. 246. 1960. *S. pugionifolium* Snowden in J. Linn. Soc. 55: 240. 1955; Bor, op. cit. 223. *S. verticilliflorum* (Steud.) Stapf in Prain, op. cit. 116; Blatt. & McC. Bombay Grass. 59. 1935; Bor, op. cit.

Herbs, annual or perennial; culms 1.5–1.8 m tall, erect, stout. Sheaths 8–15 cm long; ligule a rim of 0.3–0.4 cm long, stiff hairs. Leaves 20–45 x 2.5–4.5 cm, linear, lanceolate, margins scabrid, apex acuminate. Panicles oblong-lanceolate to pyramidal, 30–40 cm long. Sessile spikelets ellipsoid-lanceolate, 0.45–0.52 cm long, hairy around; pedicelled spikelets 0.5–0.55 cm long, linear-lanceolate, hairy, unawned. Grains ellipsoid.

Fls. & Frts. : September–December.

Illus. : Bor, op. cit. 225, f. 14; W.D. Clayton in Hepper, Fl. W. Trop. Afr. 3(2): 469, f. 449. 1972.

Distrib. : Occasional along water courses. Amaravati; Aurangabad; Nanded.

*S. controversum* (Steud.) Snowden in J. Linn. Soc. (Bot.) 55: 210. 1955; Bor, Grass. Ind. 222. 1960. *Andropogon controversus* Steud. Syn. Pl. Glum. 1: 391. 1854.

Perennials, 100–180 cm high; culms erect, slender. Leaves 30–50 x 0.5–2.0 cm, narrowly linear, tapering to a fine point; ligule short, membranous, ciliate. Panicles 15–25 x 5–15 cm. Sessile spikelets c 0.5 cm long, ovoid-lanceolate, dorsally compressed; callus small, shortly

bearded; pedicellate spikelets c as long as sessile but much narrower, unawned, male or barren. Grains obovoid.

*Fls. & Frts.* : September–January.

*Illus.* : Patunkar, Grass. Marathw. 106, f. 32. 1980.

*Distrib.* : Amaravati; Aurangabad; Nagpur; Nanded; Osmanabad; Parbhani; Satara.

*S. deccanense* Stapf ex Bor, Grass. Ind. 245. 1960. 'Kahla'.

Annuals, 30–150 cm high, erect; nodes densely bearded with silky hairs. Leaves 10–30 x 0.6–1.4 cm, finely acuminate; ligule short, ciliate. Panicles 10–25 cm long, erect. Sessile spikelets 0.75–0.85 cm long, elliptically flask-shaped, densely hirsute with reddish-brown hairs; pedicellate spikelets equalling the sessile but narrower. Grains ellipsoid.

*Fls. & Frts.* : September–December.

*Distrib.* : Amaravati; Aurangabad; Beed; Dhule; Kolhapur; Nagpur; Nanded; Nasik; Osmanabad; Parbhani; Pune; Satara; Yavatmal.

*S. halepense* (L.) Pers. Syn. Pl. 1: 101. 1805; Blatt. & McC. Bombay Grass. 5. 1935; Bor, Grass. Ind. 222. 1960; T.A. Cope in Nasir & Ali, Fl. Pak. 143: 295. 1982. *Holcus halepensis* L. Sp. Pl. 1047. 1753. *Andropogon halepensis* (L.) Brot. Fl. Lusit. 1: 89. 1804; Hook. f. Fl. Brit. India 7: 182. 1896; Cooke, Fl. Pres. Bombay 3: 502. 1958 (Repr. ed.). *Sorghum miliaceum* (Roxb.) Snowden in J. Linn. Soc. 55: 207. 1955; Bor, op. cit. 223. *S. miliaceum* var. *parvispiculum* Snowden, op. cit. 209; Bor, op. cit. 'Barro', 'Boru'.

Herbs, perennial, c 3 m high, erect; culms simple or branched, solid. Leaves 10–45 x 1.5 cm, linear-lanceolate; sheaths striate; ligules short, membranous, ciliate. Panicles 15–35 cm long, decompound. Sessile spikelets 0.4–0.5 cm long, ovoid-lanceolate; pedicelled spikelets as long as sessile but narrower. Grains terete, dark brown.

*Fls. & Frts.* : July–January.

*Illus.* : Blatt. & McC. op. cit. t. 37; Matthew, Illus. Fl. Tamilnadu Carnatic 2: tt. 937 & 938. 1982; T.A. Cope in Nasir & Ali, op. cit. 296, f. 32.

*Distrib.* : Common in all districts.



ut much narrower,

led; Osmanabad;

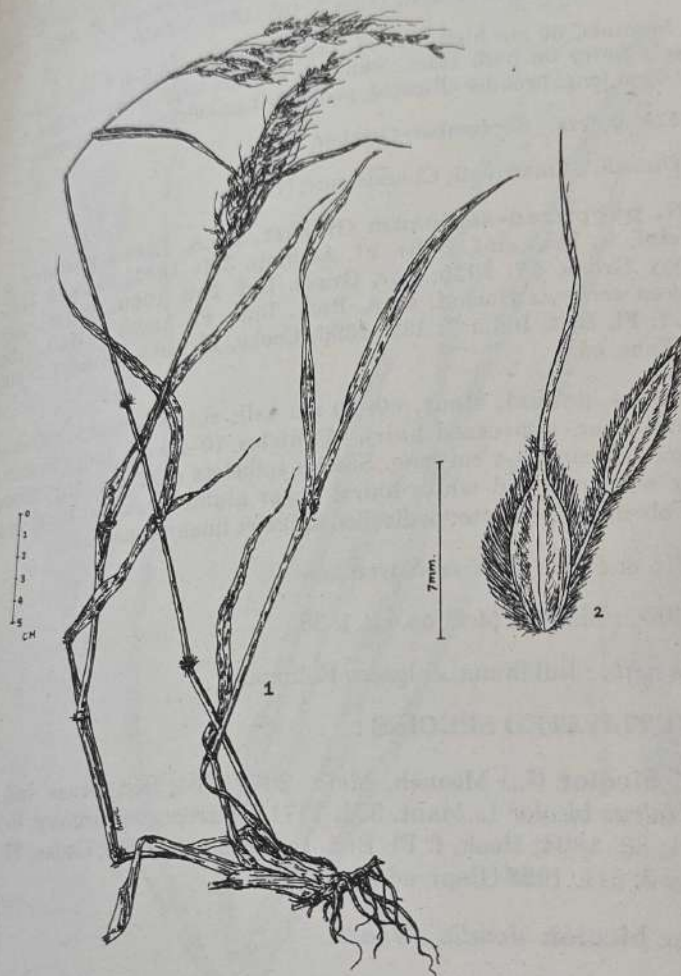
'Kakla'.  
rded with silky  
e short, ciliate.  
0.85 cm long,  
-brown hairs;  
ower. Grains

Kolhapur;  
e; Satara;

t. & McC.  
n Nasir &  
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955; Bor,  
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*Sorghum deccanense* Stapf ex Bor  
1. Habit 2. Paired spikelet

**S. nitidum** (Vahl) Pers. Syn. Pl. 1: 101. 1805; Blatt. & McC. Bombay Grass. 58. 1935; Bor, Grass. Ind. 245. 1960. *Holcus nitidus* Vahl, Symb. Bot. 2: 102. 1791. *Andropogon serratus* Thunb. Fl. Jap. 41. 1784; Stapf in Hook. f. Fl. Brit. India 7: 185. 1896. 'Chalera'.

Annuals, 60 cm high, tufted. Leaves 15-30 x 0.5-0.8 cm, linear, sparsely hairy on both sides. Panicles c 4 cm long. Sessile spikelets 0.4-0.6 cm long, broadly ellipsoid; pedicelled spikelets linear-oblong.

Fls. & Frts. : September-October.

Distrib. : Amaravati; Chandrapur; Nasik.

**S. purpureo-sericeum** (Hochst. ex A. Rich.) Aschers. & Schweinf. in Schweinf. Beitr. Fl. Aethiop. 310. 1867; Blatt. & McC. Bombay Grass. 57. 1935; Bor, Grass. Ind. 246. 1960. *Andropogon purpureo-sericeus* Hochst. ex A. Rich. Tent. Fl. Abyss. 2: 469. 1851; Hook. f. Fl. Brit. India 7: 185. 1896; Cooke, Fl. Pres. Bombay 3: 503. 1958 (Repr. ed.).

Herbs, annual, stout, 60-90 cm tall; culms smooth, polished. Leaves linear, appressed hairy. Panicles 10-20 cm long, branches filiform; racemes 2-4 cm long. Sessile spikelets c 0.5 cm long, densely villous with red and white hairs; lower glume ovate, villous, upper glume oblong-lanceolate; pedicelled spikelet linear-lanceolate.

Fls. & Frts. : October-November.

Illus. : Blatt. & McC. op. cit. t. 38.

Distrib. : Buldhana; Jalgaon; Kolhapur.

#### CULTIVATED SPECIES :

**S. bicolor** (L.) Moench. Meth. 207. 1794; Bor, Grass. Ind. 228. 1960. *Holcus bicolor* L. Mant. 301. 1771. *Andropogon sorghum* Brot. Fl. Lusit. 1: 88. 1804; Hook. f. Fl. Brit. India 7: 183. 1896; Cooke, Fl. Pres. Bombay 3: 511. 1958 (Repr. ed.).

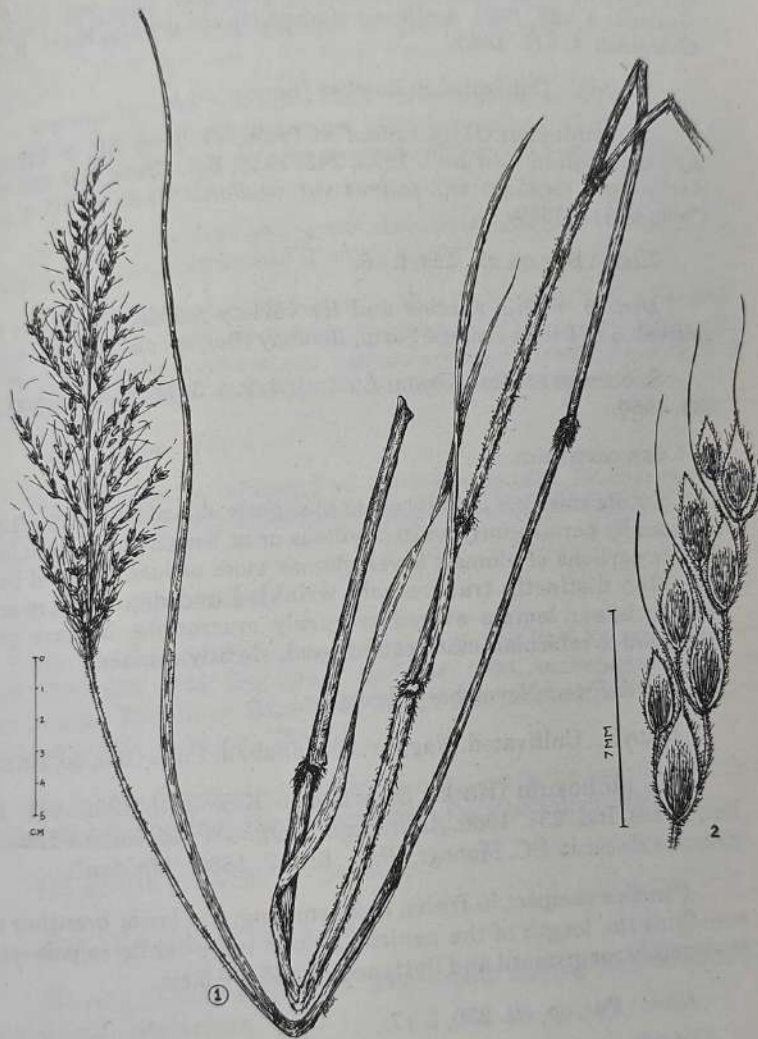
var. **bicolor**. 'Jondla', 'Juari'.

Sessile spikelets broadly obovoid, 0.4-0.5 x 0.3-0.5 cm, sometimes obovoid-rotund to subglobose when in fruit; upper lemma awned. Grains 0.3-0.45 x 0.25-0.4 cm, enclosed or more often exposed at top.

Fls. & Frts. : October-December.

Illus. : Bor, op. cit. 229, f. 15.





*Sorghum nitidum* (Vahl) Pers.  
1. Habit 2. Panicle (part)

*Distrib.* : Cultivated throughout as food grain.

var. *arduini* (Koern.) Snowden in Kew Bull. 1935: 236. 1935; Bor, Grass. Ind. 228. 1960. *Andropogon sorghum* var. *arduini* Koern. Handb. Gatreideb. 1: 312. 1885.

*Distrib.* : Cultivated in Bombay (Bor, *op. cit.*).

*S. caudatum* (Hack.) Stapf in Prain, Fl. Trop. Afr. 9: 131. 1917 p.p.; Snowden in Kew Bull. 1935: 245. 1935; Bor, Grass. Ind. 228. 1960. *Andropogon sorghum* ssp. *sativus* var. *caudatus* Hack. in DC. Monogr. Phan. 6: 517. 1889.

*Illus.* : Bor, *op. cit.* 229, f. 16.

*Distrib.* : This species and its variety *feterita* Stapf has been cultivated in Poona College Farm, Bombay (Bor, *op. cit.*).

*S. cernuum* Host, Gram. Austral. 4: 2, t. 3. 1809; Bor, Grass. Ind. 231. 1960.

var. *cernuum*.

Sessile spikelets broadly ovoid to slightly obovoid, 0.4–0.6 x 0.3–0.5 cm, usually permanently whitish villous or at length glabrescent on the thicker portions of glumes; lower glumes more or less thin and papery and often distinctly transversely wrinkled and depressed near the middle; upper lemma awned or rarely mucronate. Mature grains subrotund to orbicular, much compressed, slightly exposed.

*Fls. & Frts.* : November–December.

*Distrib.* : Cultivated. Nagpur; Osmanabad; Pune (Bor, *op. cit.*).

var. *globosum* (Hack.) Snowden in Kew Bull. 1935: 251. 1935; Bor, Grass. Ind. 231. 1960. *Andropogon sorghum* ssp. *sativus* Hack. var. *globosus* Hack. in DC. Monogr. Phan. 6: 517. 1889. 'Maldani'.

Panicles compact in fruits, 8–20 cm long; the lower branches up to one-third the length of the panicle. Grains ivory-white to pale-yellow, moderately compressed and flattened, c 0.55 x 0.5 cm.

*Illus.* : Bor, *op. cit.* 230, f. 17.

*Distrib.* : Cultivated at Bombay (Bor, *op. cit.*) and Marathwada region on a small scale (Patunkar, 1980).

var. *subcylindricum* Snowden in Kew Bull. 1935: 252. 1935; Bor, Grass. Ind. 231. 1960.

*Distrib.* : Cult

var. *yemens*  
Grass. Ind. 231.  
Bull. Herb. Boiss.

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panicle. Grains  
cm, ivory-yellow

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1775. *Androp*  
Monogr. Phan

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long.

*Distrib*

var. *p*  
Bull. 1935:  
var. *pulch*  
Bull. no. 5

Pedi  
0.55–0.65

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*Illu*

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*Distrib.* : Cultivated in the Agri. College farm, Pune (Bor, *op. cit.*).

var. *yemense* (Koern.) Snowden in Kew Bull. 1935: 251. 1935; Bor, Grass. Ind. 231. 1960. *Andropogon sorghum* var. *yemensis* Koern. in Bull. Herb. Boiss. 2: 2 (App.): 11. 1984. 'Piwali'.

Panicles more or less loose even when in fruit, 15–30 x 8–15 cm, ovoid to ellipsoid-oblong, the lower branches up to half the length of panicle. Grains moderately compressed, ellipsoid, 0.4–0.45 x 0.3–0.35 cm, ivory-yellow to red.

*Distrib.* : Cultivated on a small scale particularly in Bombay (Bor, *op. cit.*) and Beed; Osmanabad (Patunkar, 1980).

*S. dochna* (Forssk.) Snowden in Kew Bull. 1935: 234. 1935; Bor, Grass. Ind. 232. 1960. *Holcus dochna* Forssk. Fl. Aegypt.-Arab. 174. 1775. *Andropogon sorghum* ssp. *sativus* var. *saccharatus* Hack. in DC. Monogr. Phan. 6: 509. 1889; Hook. f. Fl. Brit. India 7: 184. 1896.

var. *dochna*. 'Jwari'.

Sessile spikelets ellipsoid or obovoid-ellipsoid, 0.4–0.6 cm long. Grains enclosed or only slightly exposed. Pedicelled spikelets 0.2–0.3 cm long.

*Distrib.* : Osmanabad.

var. *pulchrum* (Burkill ex Benson & Subba Rao) Snowden in Kew Bull. 1935: 235. 1935; Bor, Grass. Ind. 234. 1960. *Andropogon sorghum* var. *pulcher* Burkill ex Benson & Subba Rao in Madras Deptt. Agric. Bull. no. 55: 67. 1906 p.p. 'Dagdi'.

Pedicels of pedicelled spikelets c 0.2 cm long; sessile spikelets 0.55–0.65 cm long; lower branches longer than half the panicle.

*Fls. & Frts.* : November–December.

*Illus.* : Bor, *op. cit.* 233, f. 19.

*Distrib.* : Cultivated on a large-scale throughout. Amaravati; Marathwada (Patunkar, 1980).

var. *technicum* (Koern.) Snowden in Kew Bull. 1935: 235. 1935; Bor, Grass. Ind. 234. 1960. *Andropogon sorghum* var. *technicus* Koern. in Syst. Uebers. 20. 1873.

*Distrib.* : Cultivated in Pune (Bor, *op. cit.*).

**S. durra** (Forssk.) Stapf in Prain, Fl. Trop. Afr. 9: 129. 1917; Bor, Grass. Ind. 236. 1960. *Holcus durra* Forssk. Fl. Aegypt.-Arab. 174. 1775. *Andropogon sorghum* ssp. *sativus* var. *durra* Hack. in DC. Monogr. Phan. 6: 516. 1889.

var. **durra**.

Panicles usually dense and compact; rhachis, branches and branchlets tomentose to villous. Sessile spikelets obovoid-ellipsoid or rhomboid, 0.45–0.6 x 0.25–0.6 cm, lower glume coriaceous up to the middle or more, not transversely wrinkled and depressed about the middle; upper lemma mucronate or awned. Mature grains 0.4–0.6 cm long, biconvex, often with a broad tip. Pedicelled spikelets persistent; pedicels c 0.2 cm long.

*Distrib.* : Cultivated. Osmanabad.

var. **aegyptiacum** (Koern.) Snowden in Kew Bull. 1935: 249. 1935; Bor, Grass. Ind. 236. 1960. *Andropogon sorghum* var. *aegyptiacus* Koern. in Mem. Inst. Egypt. 2: 164. 1887. 'Dagdi'.

Sessile spikelets broadly ovoid to rhomboid, 0.25–0.45 cm wide. Grains dull-white to ivory-yellow.

*Illus.* : Bor, *op. cit.* 238, f. 20.

*Distrib.* : Cultivated in Bombay (Bor, *op. cit.*) and occasionally grown in the Marathwada region on a small-scale (Patunkar, 1980).

var. **elongatum** Snowden in Kew Bull. 1935: 250. 1935; Bor, Grass. Ind. 236. 1960.

Panicles oblong to ellipsoid-oblong, loose, 15–35 cm long. Sessile spikelets 0.5–0.6 cm long.

*Distrib.* : Cultivated in Bombay (Bor, *op. cit.*) and on a small scale in Marathwada region (Patunkar, 1980).

var. **fecundum** Snowden in Kew Bull. 1935: 250. 1935; Bor, Grass. Ind. 236. 1960. 'Maldandi'.

Panicles ovoid, ellipsoid-oblong, compact or rarely loose, 7–15 cm long, peduncle erect or goose-necked. Sessile spikelets c 0.55 cm long. Grains white or yellow.

*Fls. & Frts.* : November–December.

*Distrib.* : Cultivated in drier parts of Bombay (Bor, *op. cit.*) and on a large-scale throughout the Marathwada region (Patunkar, 1980). S.

*durra* var. *c*  
*op. cit.*). This

var. *fus*  
Ind. 236. 196

*Distrib.*

var. *ma*  
Ind. 236. 196

*Distrib*

var. *ri*  
Ind. 236. 19

*Distrib*

**S. me**  
24, 27. 191  
237. 1960.  
Blatt. & M

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oblong to  
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*durra* var. *cois* (Burkill) Snowden is also cultivated in Bombay (Bor, *op. cit.*). This is merely a color variety of *S. durra* var. *fecundum*.

var. *fuscum* Snowden in Kew Bull. 1935: 250. 1935; Bor, Grass. Ind. 236. 1960.

Distrib. : Cultivated in Bombay (Bor, *op. cit.*).

var. *maximum* Snowden in Kew Bull. 1935: 251. 1935; Bor, Grass. Ind. 236. 1960.

Distrib. : Cultivated in Bombay (Bor, *op. cit.*).

var. *rivulare* Snowden in Kew Bull. 1935: 251. 1935; Bor, Grass. Ind. 236. 1968.

Distrib. : Cultivated in Bombay (Bor, *op. cit.*).

*S. membranaceum* Chiov. in Monogr. Rapp. Col. Roma, 19, 23, 24, 27. 1912; Snowden in Kew Bull. 1935: 231. 1935; Bor, Grass. Ind. 237. 1960. *S. papyrascens* Stapf in Prain, Fl. Trop. Afr. 9: 134. 1917; Blatt. & McC. Bombay Grass. 62. 1935.

Culms up to 1.7 m across at the base of the panicle; panicles erect, oblong to oblanceolate, contracted, dense, c 30 x 10 cm; racemes tough. Sessile spikelets oblong, c 0.95 cm long, pale straw-colored or reddish; pedicelled spikelets neuter, linear or linear-lanceolate, pale straw-coloured or reddish, 0.63–0.85 cm long.

Illus. : Bor, *op. cit.* 238, f. 21.

Distrib. : Cultivated. Pune.

*S. miliiforme* (Hack.) Snowden in Kew Bull. 1935: 237. 1935; Bor, Grass. Ind. 239, f. 22. 1960. *Andropogon sorghum* ssp. *sativus* var. *miliiformis* Hack. in DC. Monogr. Phan. 6: 518. 1889.

var. *miliiforme*. 'Jwari'.

Sessile spikelets obovoid-rotund to obovoid-oblong, 0.3–0.35 cm long; glumes coriaceous almost throughout with the nerves obscure except near the tip; upper lemma mucronate. Grains exposed only at top or almost to middle, subglobose, 0.3–0.4 cm long. Pedicelled spikelets c 0.2 cm long.

Fls. & Frts. : October–December.

Illus. : Bor, *op. cit.*

Distrib. : Cultivated. Nagpur; Osmanabad.

var. **rotundulum** Snowden in Kew Bull. 1935: 237. 1935; Bor, Grass. Ind. 239. 1960. 'Shalu'.

Pedicels contracted, 4–7 cm wide; branches rigid, mostly less than 5 cm long.

*Distrib.* : Cultivated throughout Marathwada region for its small tasty grains (Patunkar, 1980).

**S. roxburghii** Stapf in Prain, Fl. Trop. Afr. 9: 126. 1917; Snowden in Kew Bull. 1935: 228. 1935; Bor, Grass. Ind. 239. 1960; S.M. Almeida, Fl. Savantwadi 2: 162. 1990. 'Jowari'.

*Distrib.* : Rarely cultivated after rice-crop, for the grains. Sindhudurg (S.M. Almeida, *op. cit.*).

**S. subglabrescens** (Steud.) Schweinf. & Aschers. in Schweinf. Beitr. Fl. Aethiop. 302, 306. 1867; Blatt. & McC. Bombay Grass. 56. 1935; Bor, Grass. Ind. 242. 1960. *Andropogon subglabrescens* Steud. Syn. Pl. Glum. 1: 393. 1854.

var. **subglabrescens**.

Sessile spikelets oblong to obovoid-oblong, 0.4–0.6 x 0.5 cm, more or less hairy when young, but at length glabrescent or scarcely strigose. Mature grains much exposed, usually broad and subspherical at top, more or less compressed and wedge-shaped at base. Lower glume of sessile spikelets thin and papery, often distinctly transversely wrinkled and depressed about the middle, upper lemma awned or rarely mucronate.

*Illus.* : Bor, *op. cit.* 244, f. 26.

*Distrib.* : Osmanabad.

var. **compactum** (Burkill ex Benson & Subba Rao) Snowden in Kew Bull. 1935: 253. 1935; Bor, Grass. Ind. 243. 1960. *Andropogon sorghum* var. *compactum* Burkill ex Benson & Subba Rao in Madras Deptt. Agric. Bull. no. 55: 67, 69. 1906 p.p.; also var. *irungiformis* subvar. *sulphureus* and var. *mediocris* subvar. *fuscescens* Burkill ex Benson & Subba Rao, *op. cit.*

Annuals, c 75 cm high.

*Distrib.* : Cultivated at Nagpur and Wardha (Bor, *op. cit.*).

var. **irungiforme** (Burkill ex Benson & Subba Rao) Snowden in Kew Bull. 1935: 253. 1935; Bor, Grass. Ind. 243. 1960. *Andropogon*

*sorghum* var. *irungiforme* Burkill ex Benson & Subba Rao, no. 55: 69. 1906 p.p.

Annuals, c 7

*Distrib.* : Bo

var. **latum** : 243. 1960.

Annuals, c

*Distrib.* Cu

var. **ovifolius** Ind. 243. 1960.

Panicles 1 or red.

*Distrib.* :

var. **pabularius** Ind. 243. 1960.

Annuals,

*Distrib.* :

var. **paniculatus** 1935; Bor, *op. cit.*

Annuals,

*Distrib.* :

var. **rupestris** Bull. 1935: 253. 1935; Bor, *op. cit.* 243. 1960.

Panicle 0.35–0.45 cm long; spikelets an

*Distrib.* : Marathwa

*sorghum* var. *irungiformis* subvar. *pallidus* & var. *mediocris* subvar. *fluescens* Burkill ex Benson & Subba Rao in Madras Deptt. Agric. Bull. no. 55: 69. 1906 p.p.

Annuals, c 75 cm high.

*Distrib.* : Bombay State. Cultivated (Bor, *op. cit.*).

var. *latum* Snowden in Kew Bull. 1935: 235. 1935; Bor, Grass. Ind. 243. 1960.

Annuals, c 75 cm high.

*Distrib.* Cultivated at Poona College Farm (Bor, *op. cit.*).

var. *oviforme* Snowden in Kew Bull. 1935: 254. 1935; Bor, Grass. Ind. 243. 1960. 'Tambdi Jwari'.

Panicles 10–15 x 6–10 cm. Grains 0.37–0.5 x 0.24–0.4 cm, yellow or red.

*Distrib.* : Cultivated. Bombay (Bor, *op. cit.*); Osmanabad.

var. *pabulare* Snowden in Kew Bull. 1935: 252. 1935; Bor, Grass. Ind. 243. 1960.

Annuals, c 75 cm high.

*Distrib.* : Cultivated at Poona College Farm (Bor, *op. cit.*).

var. *paniculatellum* (Chiov.) Snowden in Kew Bull. 1935: 253. 1935; Bor, Grass. Ind. 243. 1960. *S. basiapplicatum* Chiov. var. *paniculatellum* Chiov. in Monogr. Rapp. Colon. Rome, no. 19: 38. 1912.

Annuals, c 75 cm high.

*Distrib.* : Cultivated at Poona College Farm (Bor, *op. cit.*).

var. *rubidum* (Burkill ex Benson & Subba Rao) Snowden in Kew Bull. 1935: 253. 1935; Bor, Grass. Ind. 243. 1960. *Andropogon sorghum* var. *irungiformis* subvar. *rubidus* and var. *mediocris* subvar. *ruber* Burkill ex Benson & Subba Rao in Madras Deptt. Agric. Bull. no. 55: 68, 69. 1906.

Panicles contracted, dense and compact, 12–30 x 4–10 cm. Grains 0.35–0.45 cm long, much exposed and overtopping glumes. Pedicelled spikelets and tips of sessile ones reddish. Grains red.

*Distrib.* : Cultivated on a small-scale as a monsoon crop in Marathwada (Patunkar, 1980).

var. **rugulosum** (Hack.) Snowden in Kew Bull. 1935: 252. 1936.  
Bor, Grass. Ind. 243. 1960. *Andropogon sorghum* ssp. *sativus* Hack. var.  
*rugulosus* Hack. in DC. Monogr. Phan. 6: 508. 1889.

Annuals, c 75 cm high.

*Distrib.* : Cultivated at Nagpur farm (Bor, *op. cit.*).

#### SPINIFEX L.

**Spinifex littoreus** (Burm. f.) Merr. in Philipp. J. Sci. Bot. 7: 229.  
1912; Bor, Grass. Ind. 366. 1960. *Stipa littorea* Burm. f. Fl. Ind. 29.  
1768. *Spinifex squarrosus* L. Mant. 2: 300. 1771; Hook. f. Fl. Brit. India  
7: 63. 1896; Cooke, Fl. Pres. Bombay 3: 428. 1958 (Repr. ed.); Blatt. &  
McC. Bombay Grass. 122. 1935.

Perennials, trailing, rooting at nodes. Leaves 7–15 x 0.4–0.7 cm,  
linear, coriaceous, involute, margins minutely scaberulous, glabrous,  
apex cuspidate. Spikelets in racemes, 4 cm long; male spikelets 0.8–1.0  
cm long; lower glumes c 0.6 cm long, ovate, 7–9-nerved, nerves scabrid  
in the upper half, upper glumes c 0.7 cm long, elliptic, 9–11-nerved,  
glabrous; female spikelets in heads, c 0.8 cm long; lower and upper  
glumes c 0.8 cm long, ovate-elliptic, 7–9-nerved, nerves scabrid in upper  
half, apex acute.

*Fls. & Frts.* : October–February.

*Illus.* : Blatt. & McC. *op. cit.* t. 76 A; Gilliland, Fl. Malaya 3: 209, f.  
45. 1971; Matthew, *Illus. Fl. Tamilnadu Carnatic* 2: tt. 939 & 940. 1982.

*Distrib.* : Bombay; Raigad; Ratnagiri.

#### SPODIOPOGON Trin.

**Spodiopogon rhizophorus** (Steud.) Pilger in Engl. & Prantl,  
Pflanzenf. Aufl. 2, 14e: 119. 1940; Bor, Grass. Ind. 246. 1960.  
*Andropogon rhizophorus* Steud. Syn. Pl. Glum. 1: 381. 1854.  
*Spodiopogon albidus* Bth. in J. Linn. Soc. 19: 66. 1881; Hook. f. Fl. Brit.  
India 7: 108. 1896; Cooke, Fl. Pres. Bombay 3: 464. 1958 (Repr. ed.);  
Blatt. & McC. Bombay Grass. 51. 1935.

Herbs, annual, 0.5–1.5 m high, erect or suberect, tufted. Leaves  
5.2–16.2 x 1–3 cm, oblong-lanceolate, petiolate; ligules oblong. Panicles  
6–15 cm long. Sessile spikelets 0.7–0.8 cm long, awned; pedicelled  
spikelets 0.6–0.7 cm long, awned. Grains oblong, reddish-brown.

*Fls. & Fr*

*Illus.* : B  
f. 33. 1980; Sr

*Distrib.*  
Kolhapur; Na  
Sindhudurg;

1. Lower glum  
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2. Spike  
punge

2. Spike  
glauc

1. Lower glu  
as long :

3. Uppe  
than

4.

4.

3. Up  
long

6.

6.

*Illus.* : Blatt. & McC. *op. cit.* t. 34; Patunkar, Grass. Marathw. 112, f. 33. 1980; Sreek. & Nair, Fl. Kerala–Grass. 195, t. 40. 1991.

*Distrib.* : Ahmednagar; Amaravati; Bombay; Buldhana; Dhule; Kolhapur; Nanded; Nasik; Pune; Raigad; Ratnagiri; Satara; Sholapur; Sindhudurg; Thane.

SPOROBOLUS R. Br.

1. Lower glume as long as spikelet or at least three quarters its length :
  2. Spikelets 0.2–0.25 cm long, pale; basal leaves pungent; ligule of long hairs ... *S. virginicus*
  2. Spikelets 0.1–0.15 cm long, glaucous; basal leaves glaucous, rather lax, not pungent; ligule almost absent ... *S. helvolus*
1. Lower glume much shorter than spikelet, rarely two-thirds as long :
  3. Upper glume distinctly shorter than lemma (i.e. less than three-quarters as long) :
    4. Lemmas up to 0.1 cm long ... *S. tenuissimus*
    4. Lemmas 0.15–0.2 cm long :
      5. Leaves 8–30 cm long; anthers c 0.05 cm long ... *S. indicus*
      5. Leaves 1.0–4.7 cm long; anthers 0.09–0.1 cm long ... *S. festivus*
  3. Upper glume as long, nearly as long as or longer than lemma :
    6. Panicles contracted; lower branches not truly whorled :
      7. Annuals; stamens 2 ... *S. piliferus*
      7. Perennials; stamens 3 :
        8. Spikelets 0.15–0.175 cm long; lower glume c 0.1 cm long; leaf-margins smooth ... *S. humilis* ssp. *minor*
        8. Spikelets c 0.2 cm long; lower glume c 0.05 cm long; leaf-margins spinulose ... *S. maderaspatanus*
  6. Panicles effuse, spreading at least at maturity; lower branches truly whorled :
    9. Perennials ... *S. lolclados*
    9. Annuals :

10. Lower glume minute, less than half the length of lemma; grain obovoid
10. Lower glume at least half as long as lemma; grain ellipsoid or discoid :
11. Upper glume just exceeding lemma in length; grain discoid
11. Upper glume just equal to or shorter than lemma; grain ellipsoid

*S. coromandelianus*

... *S. capillaris*

... *S. tetragonus*

***Sporobolus capillaris*** Miq. in Verh. Konink. Nederl. Inst. 3(4) : 37. 1851; Bor, Grass. Ind. 627. 1960.

Herbs, annual; culms 25–40 cm tall, tufted, erect or ascending and branched from base. Leaves 5–12 x 0.5–0.9 cm, linear-lanceolate, rounded at base, hispid, apex abruptly acute. Panicles effuse, oblong or subpyramidal, 8–18 x 3–8 cm. Spikelets 0.17–0.19 cm long, linear-lanceolate, greyish-green. Grains 0.07–0.08 cm long, discoid.

*Fls. & Frts.* : July–February.

*Illus.* : Patunkar, Grass. Marathw. 272, f. 84. 1980.

*Distrib.* : Weed of cultivated fields. Aurangabad; Beed; Chandrapur; Nanded; Sindhudurg; Yavatmal.

*Notes* : Arnott had given a manuscript name to this species as *Vilfa capillaris*. But it was never published and Miquel (*op.cit.*) described it as *S. capillaris*. Hook. f. (*op.cit.*) treated this as a synonym of *S. pulchellus* R. Br. Prodr. 170. 1810. Incidentally *S. pulchellus* R. Br. is an Australian grass and what has been described by Hook. f. has been found to be a different and a new species by Bor who published it as *S. tetragonus* in Kew Bull. 1949: 251. 1949. This species is common in Western parts of India. It has been described as *S. scabrifolius* Bhide in J. & Proc. Asiat. Soc. Bengal N.S. 8: 312. 1912. Apparently Bhide was not aware of Miquel's name.

***S. coromandelianus*** (Retz.) Kunth, Rev. Gram. 1: 68. 1829; Hook. f. Fl. Brit. India 7: 252. 1896; Cooke, Fl. Pres. Bombay 3: 542. 1958 (Repr.ed.); Blatt. & McC. Bombay Grass. 228. 1935; Bor, Grass. Ind. 627. 1960. *Agrostis coromandeliana* Retz. Obs. Bot. 4: 19. 1786.

Herbs, annual; culms 15–35 cm tall, densely tufted, erect, ascending or often spreading from roots. Leaves 3–8 x 0.3–0.5 cm, linear-lanceolate; ligules narrow, membranous, fringed with long fine hairs. Panicles ovoid or pyramidal. Spikelets lanceolate. Grains broadly ellipsoid, reddish-brown.

*Fls. & Frts.* : November–January.

*Illus.* :  
Tamilnadu C

*Distrib*  
Dhule; Jalga  
*op.cit.*; Os  
Yavatmal.

*S. fe*  
Patunkar

Herb  
1.0–4.7 x  
apex. Pa  
cm long,  
oblong.

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*Illus.* : Blatt. & McC. *op.cit.* t. 153; Matthew, Further *Illus. Fl. Tamilnadu Carnatic* 4: t. 825. 1988.

*Distrib.* : Ahmednagar; Akola; Amaravati; Aurangabad; Bombay; Dhule; Jalgaon; Kolhapur; Nagpur; Nanded; Nasik (Blatt. & McC. *op.cit.*); Osmanabad; Parbhani; Pune; Sanjli; Satara; Sholapur; Yavatmal.

*S. festivus* Hochst. ex A. Rich. Tent. *Fl. Abyss.* 2:398. 1851; Patunkar in *Bull. Bot. Surv. India* 17: 168, f. 1. (1975) 1978.

Herbs, perennial; culms 15–60 cm tall, loosely tufted. Leaves 1.0–4.7 x 0.5–0.75 cm, convolute, mostly basal, pungent to acute at apex. Panicles effuse, oblong, 4.5–15.0 x 1.5–4.0 cm. Spikelets 1.2–1.7 cm long, lanceolate, slatey-grey. Grains 0.05–0.06 cm long, ellipsoid-oblong.

*Fls. & Frts.* : August–January.

*Illus.* : Patunkar, *op. cit.*

*Distrib.* : Rare in open grasslands, on old and dilapidated walls. Aurangabad; Beed; Nanded; Satara (Salunkhe, 1995).

*S. helvolus* (Trin.) Th. Dur. & Schinz. *Consp. Fl. Afr.* 5:820. 1895; Bor, *Grass. Ind.* 629. 1960. *Vilfa helvola* Trin. in *Mem. Acad. Sci. Petersb.* 6, 5(2):52. 1839. *Sporobolus glaucifolius* Hochst. ex Steud. *Syn. Pl. Glum.* 154. 1854; Hook. f. *Fl. Brit. India* 7: 250. 1896; Cooke, *Fl. Pres. Bombay* 3: 540. 1958 (Repr. ed.); Blatt. & McC. *Bombay Grass.* 224. 1935.

Perennials, tufted, with long slender stolons; culms 15–60 cm high. Leaves 2–15 x 0.2–0.4 cm, flat, tapering to a filiform tip. Panicles linear to narrowly lanceolate, 4–12 x 0.5–2.0 cm. Spikelets 0.14–0.2 cm long, greenish-brown. Grains c 0.05 cm long, ellipsoid.

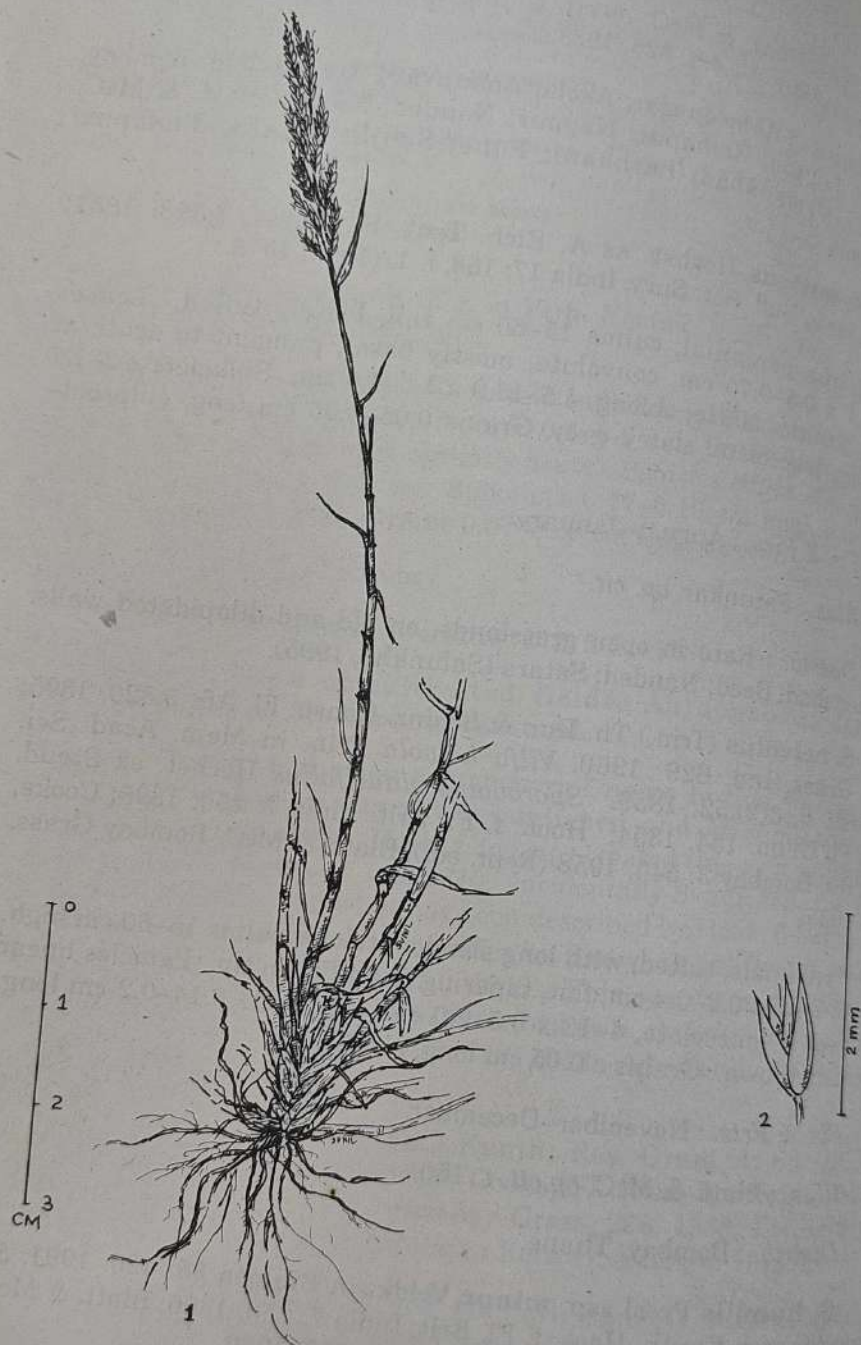
*Fls. & Frts.* : November–December.

*Illus.* : Blatt. & McC. *op.cit.* t. 150.

*Distrib.* : Bombay; Thane.

*S. humilis* Presl ssp. *minor* Veldk. in *Blumea* 35: 420. 1991. *S. tremulus* non Kunth; Hook. f. *Fl. Brit. India* 7: 250. 1896; Blatt. & McC. *Bombay Grass.* 225. 1935; Bor, *Grass. Ind.* 633. 1960.

Glaucous perennials with leafy stolons; culms 7–30 cm high, erect or ascending. Leaves 0.5–3.0 x 0.04–0.17 cm, convolute, distichous,



*Sporobolus humilis* Presl ssp. *minor* Veldk.  
1. Habit 2. Spikelet

Pungent. Panicles spike-like, linear, 1.5–8.0 x 0.3–0.5 cm. Spikelets 0.14–0.21 cm long. Grains 0.07–0.09 cm long, broadly oblong.

*Illus.* : Matthew, Further *Illus.* Fl. Tamilnadu Carnatic 4: t. 829, 1988.

*Distrib.* : Aurangabad; Nanded.

**S. indicus** (L.) R. Br. Prodr. 170. 1810.

1. Panicles effuse; stamens 2

1. Panicles contracted; stamens 3

... var. *flaccidus*

... var. *major*

var. **flaccidus** (R. & S.) Veldk. in Blumea 35: 433. 1991. *Agrostis elongata* (R. Br.) Roth ex R. & S. var. *flaccida* Roth ex R. & S. Syst. Veg. 2: 368. 1817. *Sporobolus indicus* var. *diandrus* (Retz.) Jovet & Guedes in Bull. Centre Et Rech. Sci. Biarritz. 7: 65. 1968 & in Taxon 22: 163. 1973. *Agrostis diandra* Retz. Obs. Bot. 5: 19. 1789. *Sporobolus diander* (Retz.) P. Beauv. Ess. Agrost. 26, 147, 178. 1812; Hook. f. Fl. Brit. India 7: 247. 1896; Cooke, Fl. Pres. Bombay 3: 539. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 221. 1935; Bor, Grass. Ind. 629. 1960.

Herbs, perennial; culms 20–60 cm tall, tufted, erect. Leaves 8–35 x 0.2–0.4 cm, narrowly linear, convolute; ligule a narrow ridge of minute hairs. Panicles narrowly pyramidal. Spikelets ovoid, shortly pedicelled. Grains obovoid, reddish-brown.

*Fls. & Frts.* : September–December.

*Illus.* : Blatt. & McC. *op.cit.* t. 148; Gilliland, Fl. Malaya 3: 107, f. 18. 1971; Matthew, Further *Illus.* Fl. Tamilnadu Carnatic 4: t. 826. 1988 (*Sporobolus diander*).

*Distrib.* : Common in all districts.

var. **major** (Buse) Baaijens in Blumea 35: 437. 1991. *Sporobolus diandrus* (Retz.) Beauv. var. *major* Buse in Miq. Pl. Jungh. 3: 343. 1854. *S. indicus* var. *fertilis* (Steud.) Jovet & Guedes in Bull. Centre Et Rech. Sci. Biarritz. 7: 50. 1968 & in Taxon 22: 163. 1973. *Agrostis fertilis* Steud. Syn. Pl. Glum. 170. 1855. *Sporobolus fertilis* (Steud.) W.D. Clayton in Kew Bull. 19: 291. 1965. *S. indicus auctt. non* (L.) R. Br. 1810; Hook. f. Fl. Brit. India 7: 247. 1896; Cooke, Fl. Pres. Bombay 3: 539. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 222. 1935; Bor, Grass. Ind. 630, f. 76. 1960.

Herbs, perennial, densely tufted, 30–60 cm high. Leaves crowded near base, 5–20 cm long, wiry, convolute or rarely flat. Panicles 15–20

cm long, interrupted. Spikelets 0.1–0.2 cm long, shortly pedicelled.  
Grains obovoid, reddish-brown.

*Fls. & Frts.* : September–December.

*Illus.* : Bor, *op.cit.*

*Distrib.* : Ahmednagar; Amaravati; Aurangabad; Beed; Dhule; Kolhapur; Nanded; Nasik; Osmanabad; Pune; Sangli; Satara; Sholapur; Thane.

***S. iolclados*** (Nees ex Trin.) Nees, Fl. Afr. Austral. 161. 1841; T.A. Cope in Nasir & Ali, Fl. Pak. 143: 141. 1982. *Vilfa iolclados* Nees ex Trin. in Mem. Acad. Sci. Petersb. 6, 4: 65. 1840. *Sporobolus marginatus* Hochst. ex A. Rich. Tent. Fl. Abyss. 2: 397. 1851; Bor, Grass. Ind. 632. 1960 *p.p.* *S. arabicus sensu* Hook. f. Fl. Brit. India 7: 252. 1896 non Boiss. 1853; Cooke, Fl. Pres. Bombay 3: 541. 1958 (Repr.ed.); Blatt. & McC. Bombay Grass. 227. 1935.

Caespitose perennials; culms 15–60 cm high. Leaves 2–30 x 0.2–0.5 cm, flat, margins cartilaginous and usually bearing stiff hairs. Panicles 3–20 cm long, pyramidal, usually spreading. Spikelets 0.15–0.22 cm long, grey-green to pallid. Grain 0.06–0.1 cm long, ellipsoid.

*Distrib.* : Bombay; Thane.

***S. maderaspatanus*** Bor in Kew Bull. 1957:234. 1957 & Grass. Ind. 632. 1960. *S. orientalis* Kunth, *nom. illegit.*; Hook. f. Fl. Brit. India 7: 251. 1896; Cooke, Fl. Pres. Bombay 3: 541. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 225. 1935.

Herbaceous grasses; culms 15–50 cm tall, stoloniferous. Leaves 3–15 x 0.2–0.4 cm, linear to linear-lanceolate, scaberulous on margins. Spikelets 0.17–0.2 cm long, in 3–10 cm long, pyramidal panicles.

*Fls. & Frts.* : August–December.

*Illus.* : Matthew, Illus. Fl. Tamilnadu Carnatic 2: tt. 941 & 942. 1982.

*Distrib.* : Bombay; Dhule; Thane.

***S. piliferus*** (Trin.) Kunth, Enum. Pl. 1: 211. 1833; Hook. f. Fl. Brit. India 7: 251. 1896; Cooke, Fl. Pres. Bombay 3: 541. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 226. 1935; Bor, Grass. Ind. 632. 1960. *Vilfa pilifera* Trin. Diss. Bot. 157. 1824.

Annuals, 1  
linear, deciduous  
Panicles cylindrical  
lower glumes  
elliptic, hyaline

*Fls. & Frts.*

*Illus.* : Bl  
Hassan Dt. 70  
Carnatic 4: t.

*Distrib.*  
Sindhudurg.

***S. tenu***  
Grass. Ind.  
Bot. Ges. R  
Enum. Hor  
Cooke, Fl. P  
Grass. 223.

Herbs  
4–12 x 0.  
Panicle 3-  
0.1–0.13  
ellipsoid-

*Fls.*

*Dis*  
Bombay

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branch

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India  
Ind.

Annuals, 15–20 cm tall, tufted. Leaves 2.5–5.0 x 0.2–0.3 cm, linear, deciduous hairy on both sides, margins bulbous based hairy. Panicles cylindrical, 4–6 cm long. Spikelets c 0.2 cm long, ellipsoid; lower glumes oblong–elliptic, hyaline; upper glumes c 0.2 cm long, elliptic, hyaline, apex acute, 1-nerved.

*Fls. & Frts.* : August–September.

*Illus.* : Blatt. & McC. *op.cit.* t. 151; Ramam. in Sald. & Nicols. *Fl. Hassan Dt.* 702, f. 111. A. 1976; Matthew, Further. *Illus. Fl. Tamilnadu Carnatic* 4: t. 827. 1988.

*Distrib.* : Kolhapur (Salunkhe, 1995); Ratnagiri, Satara; Sindhudurg.

**S. tenuissimus** (Schränk) O. Ktze. *Rev. Gen. Pl.* 3: 369. 1893; Bor, *Grass. Ind.* 633. 1960. *Panicum tenuissimum* Schrank in Denkschr. Bot. Ges. Regensb. 2: 26. 1822. *Sporobolus minutiflorus* (Trin.) Link, *Enum. Hort. Berol.* 1: 88. 1827; Hook. f. *Fl. Brit. India* 7: 248. 1896; Cooke, *Fl. Pres. Bombay* 3: 540. 1958 (Repr.ed.); Blatt. & McC. *Bombay Grass.* 223. 1935.

Herbs, annual; culms 10–30 cm tall, erect, terete, delicate. Leaves 4–12 x 0.02–0.03 cm, flat or convolute, finely acuminate at apex. Panicle 3–35 x 1–3 cm, effuse, oblong or subpyramidal. Spikelets 0.1–0.13 cm long, lanceolate, slate-grey. Grains 0.05–0.06 cm long, ellipsoid–oblong.

*Fls. & Frts.* : October–December.

*Distrib.* : Rare along water courses. Amaravati; Aurangabad; Bombay; Ratnagiri & Sindhudurg (Salunkhe, 1995).

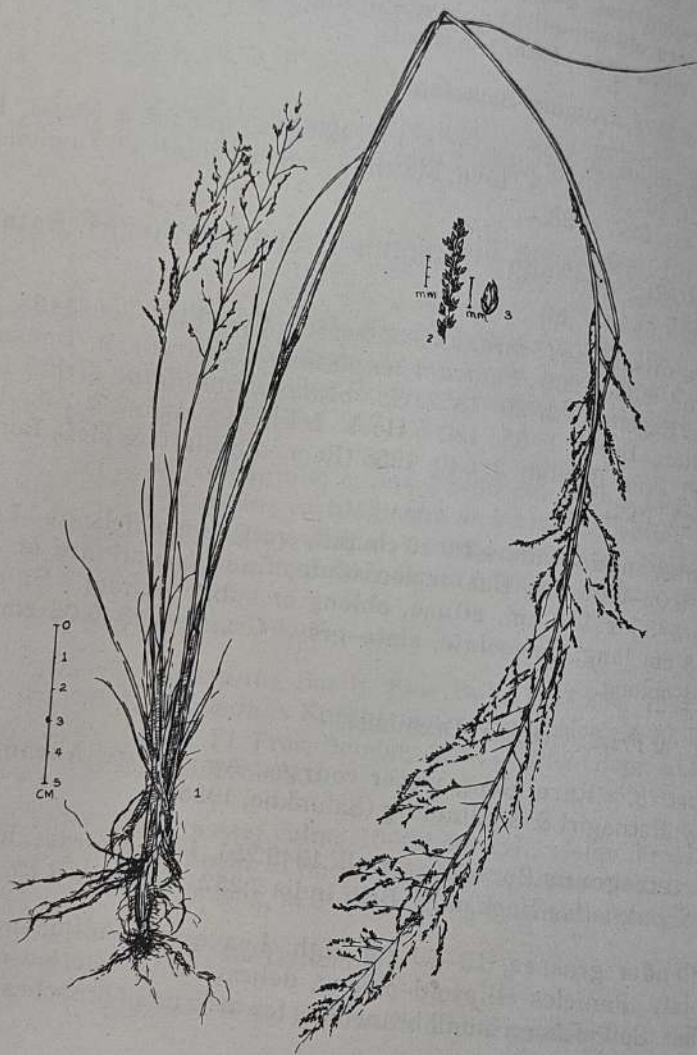
**S. tetragonus** Bor in Kew Bull. 1949:251. 1949 & *Grass. Ind.* 633. 1960. *S. pulchellus* Hook. f. *Fl. Brit. India* 7:252. 1896 non R.Br. 1810.

Slender grasses, 15–60 cm high. Leaves spreading, narrowly lanceolate. Panicles ellipsoid–oblong, delicate with whorled capillary branches. Spikelets on small branchlets towards tip of branches.

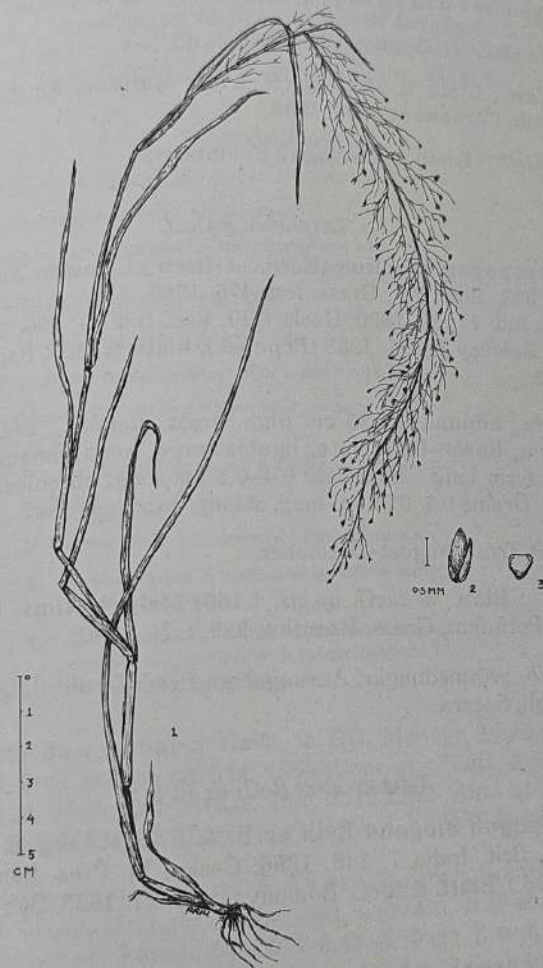
*Fls. & Frts.* : September–October.

*Distrib.* : Rare in cultivated fields. Nagpur.

**S. virginicus** (L.) Kunth, *Rev. Gram.* 1: 67. 1829; Hook. f. *Fl. Brit. India* 7: 249. 1896; Blatt. & McC. *Bombay Grass.* 224. 1935; Bor, *Grass. Ind.* 634. 1960. *Agrostis virginica* L. *Sp. Pl.* 63. 1753.



*Sporobolus tenuissimus* (Schrank) O. Ktze.  
1. Habit 2. Panicle (part) 3. Spikelet



*Sporobolus tetragonus* Bor  
1. Habit 2. Spikelet 3. Caryopsis

Perennials, decumbent-ascending, rooting at nodes. Leaves 4-10 x 0.2-0.3 cm, linear. Panicles 4-5 cm long. Spikelets c 0.3 cm long, narrowly ellipsoid; lower glumes elliptic-oblong, hyaline, glabrous, upper glumes c 0.25 cm long, hyaline, 1-nerved, apex acute.

*Fls. & Frts.* : August-December.

*Illus.* : Blatt. & McC. *op.cit.* t.149; Matthew, *Further Illus. Fl. Tamilnadu Carnatic* 4: t.830. 1988.

*Distrib.* : Bombay; Ratnagiri; Sindhudurg.

#### TETRAPOGON Desf.

**Tetrapogon tenellus** (Koen. ex Roxb.) Chiov. in *Ann. Ist. Bot. Roma* 8: 352. 1908; Bor, *Grass. Ind.* 475. 1960. *Chloris tenella* Koen. ex Roxb. *Fl. Ind.* 1: 330. 1820; Hook. f. *Fl. Brit. India* 7: 290. 1896; Cooke, *Fl. Pres. Bombay* 3: 555. 1958 (Repr. ed.); Blatt. & McC. *Bombay Grass.* 254. 1935.

Herbs, annual, 20-25 cm high, erect, slender. Leaves 6-10 x 0.3-0.4 cm, linear-lanceolate; ligules large, membranous, truncate. Spikes c 4 cm long. Spikelets 0.4-0.5 cm long, obconical, bifarious, 3-awned. Grains 0.3-0.35 cm long, oblong, subtrigonus.

*Fls. & Frts.* : August-December.

*Illus.* : Blatt. & McC. *op.cit.* t.169; Mahesh. *Illus. Fl. Delhi* f. 236. 1966; Patunkar, *Grass. Marathw.* 229, f. 70. 1980.

*Distrib.* : Ahmednagar; Aurangabad; Beed; Dhule; Jalgaon; Nasik; Pune; Sangli; Satara.

#### THELEPOGON Roth ex R. & S.

**Thelepogon elegans** Roth ex R. & S. *Syst. Veg.* 2: 788. 1817; Hook. f. *Fl. Brit. India* 7: 148. 1896; Cooke, *Fl. Pres. Bombay* 3: 490. 1958 (Repr. ed.); Blatt. & McC. *Bombay Grass.* 27. 1935; Bor, *Grass. Ind.* 247. 1960.

Herbs, annual, robust; culms 20-60 cm tall, erect or basally geniculate, tufted. Leaves 5-20 x 0.6-1.5 cm, linear, bulbous hairy; ligules narrow, membranous. Racemes 2.5-5.0 cm long, corymbose. Spikelets c 0.6 cm long, ovoid, beaked. Grains oblong-ellipsoid, brown.

*Fls. & Frts.* : September-January.

*Illus.* : Blatt. & McC. *op.cit.* t. 18; W.D. Clayton in Hepper, Fl. W. Trop. Afr. 3(2): 475, f. 452. 1972; Patunkar, Grass. Marathw. 114, f. 34. 1980.

*Distrib.* : Ahmednagar; Akola; Amaravati; Aurangabad; Bhandara; Buldhana; Chandrapur; Dhule; Kolhapur; Nagpur; Nanded; Nasik; Osmanabad; Pune; Raigad; Sangli; Satara; Thane; Yavatmal.

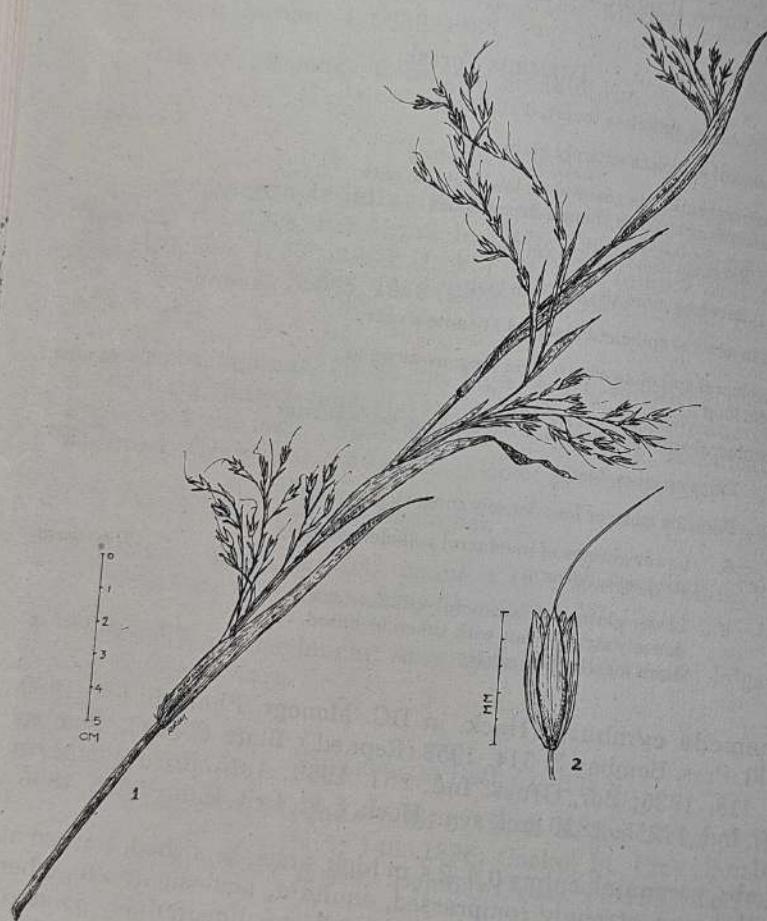
THEMEDA Forssk.

1. Pairs of involucre spikelets inserted at different levels :
  2. Involucre spikelets entirely glabrous ... *T. cymbaria*
  2. Involucre spikelets covered on lower glume with numerous or sparse tubercle-based hairs :
    3. Racemes less than 1.5 cm long ... *T. triandra*
    3. Racemes more than 1.5 cm long ... *T. tremula*
1. Pairs of involucre spikelets inserted at same level :
  4. Involucre spikelets over 0.6 cm long; awns up to 6 cm long ... *T. triandra*
  4. Involucre spikelets less than 0.6 cm long; awns shorter :
    5. Panicles loose, leafy ... *T. laxa*
    5. Panicles more or less densely congested, not leafy :
      6. Lower glumes of involucre spikelets densely strigose all over ... *T. strigosa*
      6. Lower glumes of involucre spikelets not densely strigose but with tubercle-based hairs mostly towards tip ... *T. quadrivalvis*

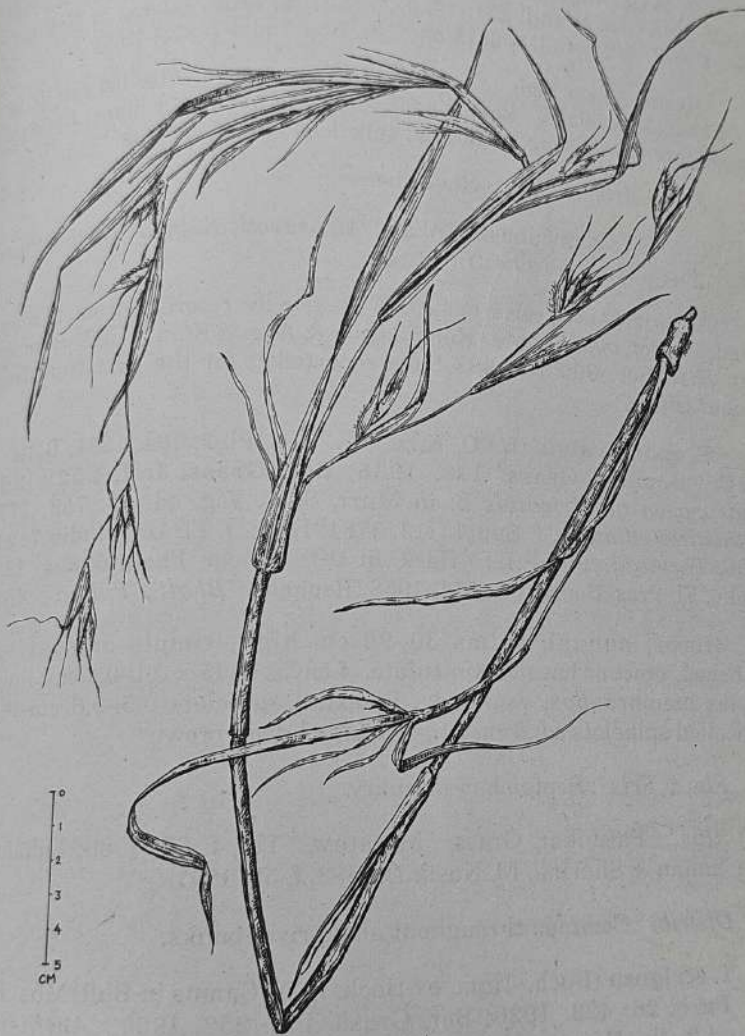
**Themeda cymbaria** Hack. in DC. Monogr. Phan. 6: 668. 1889; Cooke, Fl. Pres. Bombay 3: 514. 1958 (Repr.ed.); Blatt. & McC. Bombay Grass. 118. 1935; Bor, Grass. Ind. 251. 1960. *Anthistiria cymbaria* Roxb. Fl. Ind. 1: 255. 1820 *excl. syn.*; Hook. f. Fl. Brit. India 7: 215. 1896.

Herbs, perennial; culms 0.9–2.4 m high, erect, branched, clothed at base with broad, strongly compressed, equitant, leaf-sheaths together 3.7–5.0 cm across. Leaves 60–120 x 0.43–0.75 cm, linear, finely pointed, scaberulous above, smooth beneath, margins scabrid. Panicles 30–60 cm long, supra-decompound; branches loaded with small shortly pedunculate oblong fascicles, 1.2–2.0 cm long of racemes. Involucre spikelets 0.43–0.6 cm long; pedicellate spikelets with glabrous pedicels; bisexual spikelets solitary, subsessile.

*Fls. & Frts.* : August–October.



*Themeda cymbaria* Hack.  
1. Habit 2. Spikelet



*Themeda laxa* (Anders.) A. Camus

*Distrib.* : Common amidst bushes in partially shady places. Dhule; Sindhudurg (S.M. Almeida, Fl. Savantwadi 2: 158. 1990).

**T. laxa** (Anders.) A. Camus in Bull. Mus. Hist. Nat. Paris 26: 423. 1920; Bor, Grass. Ind. 251. 1960. *Anthistiria laxa* Anders. in Nov. Act. Sci. Upsal. 3, 2: 243. 1856; Hook. f. Fl. Brit. India 7: 213. 1896.

Herbs, 35 cm high, erect, tufted. Leaves 6–15 x 0.2–0.4 cm, linear or linear-lanceolate. Raceme fascicles 1.0–1.5 cm in diam. Bisexual spikelets c 0.4 cm long; pedicelled spikelets 0.5–0.6 cm long.

*Fls. & Frts.* : August–November.

*Distrib.* : Ahmednagar; Akola; Amaravati; Nagpur; Nasik; Pune; Sholapur; Thane; Wardha; Yavatmal.

*Notes* : This species has been previously recorded from Madhya Pradesh (Bor, *op.cit.*) only. Karthikeyan & Anand Kumar in *J. Bombay nat. Hist. Soc.* 80:257. 1983 have reported it for the first time from Maharashtra.

**T. quadrivalvis** (L.) O. Ktze. Rev. Gen. Pl. 2: 794. 1891; Blatt. & McC. Bombay Grass. 118. 1935; Bor, Grass. Ind. 252. 1960. *Andropogon quadrivalvis* L. in Murr. Syst. Veg. ed. 13. 758. 1774. *Anthistiria ciliata* L. f. Suppl. 113. 1781; Hook. f. Fl. Brit. India 7: 213. 1896. *Themeda ciliata* (L.f.) Hack. in DC. Monogr. Phan. 6: 664. 1889; Cooke, Fl. Pres. Bombay 3: 514. 1958 (Repr.ed.). 'Bhati', 'Fulora', 'Zini'.

Herbs, annual; culms 30–90 cm high, simple or sparingly branched, erect or basally geniculate. Leaves 6–15 x 0.1–0.4 cm, linear, ligules membranous, rounded. Bisexual spikelets 0.5–0.6 cm long; pedicelled spikelets c 0.6 cm long. Grains linear, brown.

*Fls. & Frts.* : September–January.

*Illus.* : Patunkar, Grass. Marathw. 116, f. 35. 1980; Lakshminarasimhan & Sharma, Fl. Nasik Dt. 588, f. 52. 1991.

*Distrib.* : Common throughout along river banks.

**T. strigosa** (Buch.–Ham. ex Hook. f.) A. Camus in Bull. Mus. Hist. Nat. Paris 26: 423. 1920; Bor, Grass. Ind. 252. 1960. *Anthistiria strigosa* Buch.–Ham. ex Hook. f. Fl. Brit. India 7: 214. 1896.

Perennials c 1 m tall, stout; culms terete, smooth, polished. Leaves up to 30.0 x 0.3 cm, linear-lanceolate, ending in a filiform tip. Inflorescence a compound panicle up to 60 cm long with long slender upright branches. Racemes of 4 involucre spikelets and two or more

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Bisexual spike  
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*Distrib.*

**T. trem**  
1889; Cooke  
Bombay Gr.  
*tremula* Nees  
India 7: 214

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201, t. 42.

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*Illus.*  
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sessile hermaphrodite spikelets. Involucral spikelets c 0.43 cm long. Bisexual spikelets usually 2, pale, 0.3–0.38 cm long. Pedicelled spikelet 1 to lower and 2 to upper 2–sexual spikelet.

*Distrib.* : Bombay State (Bor, *op.cit.*).

*T. tremula* (Nees ex Steud.) Hack. in DC. Monogr. Phan. 6: 667. 1889; Cooke, Fl. Pres. Bombay 3: 515. 1958 (Repr.ed.); Blatt. & McC. Bombay Grass. 119. 1935; Bor, Grass. Ind. 254. 1960. *Anthistiria tremula* Nees ex Steud. Syn. Pl. Glum. 1: 401. 1855; Hook. f. Fl. Brit. India 7: 214. 1896. 'Barki', 'Bhatandi'.

Herbs, perennial; culms 30–120 cm high, erect or ascending from creeping rootstocks. Leaves linear, tips setaceous, margins scabrid; ligules narrow, membranous. Panicles 30–60 cm long. Involucral spikelets c 0.7 cm long; pedicelled spikelets same as involucral ones but glabrous. Bisexual spikelets c 0.4 cm long.

*Fls. & Frts.* : October–February.

*Illus.* : Blatt. & McC. *op.cit.* t. 75; Sreek. & Nair, Fl. Kerala–Grass. 201, t. 42. 1991.

*Distrib.* : Ahmednagar; Bhandara; Bombay; Kolhapur; Nasik (Blatt. & McC. *op.cit.*); Pune; Ratnagiri; Satara; Sindhudurg; Thane.

*T. triandra* Forssk. Fl. Aegypt.–Arab. 123 & 178. 1775; Blatt. & McC. Bombay Grass. 115. 1935; Bor, Grass. Ind. 254. 1960. *Anthistiria imberbis* Retz. Obs. Bot. 3: 11. 1783; Hook. f. Fl. Brit India 7: 211. 1896. *Themeda imberbis* (Retz.) T. Cooke, Fl. Pres. Bombay 2: 993. 1908 [ 3: 513. 1958 (Repr.ed.) ]. 'Batani', 'Bunden'.

Herbs, perennial, densely tufted, 30–90 cm high, erect or geniculately ascending. Leaves 10–18 x 0.2–0.5 cm, narrowly linear, margins coriaceous; ligules narrow, ciliolate, membranous. Panicles 10–18 cm long. Pedicelled spikelets linear–lanceolate; bisexual spikelets c 0.6 cm long. Grains 0.25–0.3 cm long, subcylindric, ventrally grooved.

*Fls. & Frts.* : September–February.

*Illus.* : Blatt. & McC. *op.cit.* t. 74; Bor, *op.cit.* 253, f. 27; Matthew, Illus. Fl. Tamilnadu Carnatic 2:tt. 943 & 944. 1982; Ugemuge, Fl. Nagpur Dt. t. 192. 1986.

*Distrib.* : Common in all districts.

## THYSANOLAENA Nees

**Thysanolaena maxima** (Roxb.) O. Ktze. Rev. Gen. Pl. 2: 794. 1891; Bor, Grass. Ind. 650. 1960. *Agrostis maxima* Roxb. Fl. Ind. 1: 319. 1820. *Thysanolaena agrostis* Nees in Edinb. New Phil. J. 18: 180. 1935; Hook. f. Fl. Brit. India 7: 61. 1896; Cooke, Fl. Pres. Bombay 3: 527. 1958 (Repr.ed.). *T. procera* Mez in Jan. Bot. Archiv. 1: 27. 1922; Blatt. & McC. Bombay Grass. 201. 1935.

Herbs, perennial, 1.5–3.5 m high, stout. Leaves 30–60 cm long, linear-lanceolate; ligules ciliate. Panicles 30–60 cm long. Spikelets c 0.1 cm long, ovoid-lanceolate.

*Fls. & Frts.* : January–April.

*Illus.* : Blatt. & McC. *op. cit.* t. 132; Matthew, Further Illus. Fl. Tamilnadu Carnatic 2: tt. 945 & 946. 1982.

*Distrib.* : Dhule; Nasik; (Cooke, *op. cit.*); Pune; Satara; Thane (Cooke, *op. cit.*).

TRAGUS A. Hall. (*nom. cons.*)

**Tragus roxburghii** Panigr. in Kew Bull. 29: 496. 1974. *T. racemosus* Hook. f. Fl. Brit. India 7: 97. 1896 non Scop. 1777; Cooke, Fl. Pres. Bombay 3: 535. 1958 (Repr. ed.). *T. biflorus auct. non* Schult. 1824; Bor, Grass. Ind. 682. 1960. *Nazia racemosa auct. non*. O. Ktze. 1891; Blatt. & McC. Bombay Grass. 217. 1935.

Herbs, 5–8 cm high, tufted, simple or branched, erect or diffuse, stoloniferous, rooting at nodes. Leaves 1.0–2.5 x 0.1–0.3 cm, linear-lanceolate, margins pectinately ciliate. Racemes 1–3 cm long. Spikelets 0.2–0.3 cm long, strongly ribbed with sharp spinous processes. Grains ellipsoid-lanceolate, pale brown.

*Fls. & Frts.* : August–September.

*Illus.* : Blatt. & McC. *op. cit.* t. 141; Mahesh. Illus. Fl. Delhi f. 242. 1966; Patunkar, Grass. Marathw. 280, f. 86. 1980; Matthew, Illus. Fl. Tamilnadu Carnatic 2: tt. 949 & 950. 1982.

*Distrib.* : Ahmednagar; Akola; Amaravati; Aurangabad; Bombay; Dhule (Blatt. & McC. *op. cit.*); Kolhapur; Konkan (Cooke, *op. cit.*); Nagpur; Nanded; Nasik; Osmanabad; Parbhani; Pune; Satara; Sholapur; Yavatmal.

*Notes.* : Roxburgh named this species as *Lappago biflora* in Fl. Ind. 1: 284. 1820. Unfortunately he cited *Phalaris muricata* Forssk. Fl.

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205. 1824)  
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new name.  
*muricata* F  
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Aegypt.-Arab. 202. 1775 as a synonym. Consequently, *L. biflora* became a superfluous name for *P. muricata* Forssk. Shultes (Mant. Syst. Veg. 2: 205. 1824) proposed the combination *T. biflorus* based on *Lappago biflora* Roxb. under Art. 72 of ICBN, this name can be accepted as a new name. However, they have to be typified by the type of *Phalaris muricata* Forssk. which is from the sea of Marmora in Turkey. Though the type has not been located it is presumed by Panigrahi (*op. cit.*) that it may turn out to be *T. racemosus* (L.) All. which is different plant altogether.

It is apparent that the Indian species so long known as *T. biflorus* do not possess a valid name. Hence, Panigrahi has described it as a new species.

#### TRILOBACHNE Schenck ex Henr.

**Trilobachne cookei** (Stapf) Schenck ex Henr. in Meded. Rijks-Herb. Leiden n. 67: 4. 1931; Bor, Grass. Ind. 268. 1960. *Polytoca cookei* Stapf in Hook. Ic. Pl. t. 2333. 1894; Hook. f. Fl. Brit. India 7: 101. 1896; Cooke, Fl. Pres. Bombay 3: 518. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 5. 1935. *Andropogon cookei* (Stapf) Stapf ex Woodr. in J. Bombay nat. Hist. Soc. 13: 438. 1901. 'Dhokri', 'Kurisai'.

Herbs, annual, erect, up to 3 m high; nodes bearded. Leaves 18-30 x 1.0-5.5 cm, linear-lanceolate, hispid. Flowering branches fasciculate crowded in upper leaf axils. Male panicles 6.5-8.5 cm long; male spikelets 0.7-0.9 cm long. Female spikelets 0.7-0.9 cm long, oblong, 3-lobed at apex. Grains compressed.

Fls. & Frts. : September-November.

Illus. : Blatt. & McC. *op. cit.* t. 2.

Distrib. : Bombay (Cooke, *op. cit.*); Kolhapur; Nasik; Pune; Raigad; Ratnagiri; Satara (Cooke, *op. cit.*); Thane.

#### TRIPLOPOGON Bor

**Triplopogon ramosissimus** (Hack.) Bor in Kew Bull. 1954: 501. 1954 & Grass. Ind. 255. 1960. *Ischaemum ramosissimum* Hack. in DC. Monogr. Phan. 6: 249. 1889; Hook. f. Fl. Brit. India 7: 137. 1896. *Ispathiflorum* Hook. f. *op. cit.* 138; Cooke, Fl. Pres. Bombay 3: 481. 1958 (Repr. ed.). *Sehima spathiflorum* (Hook. f.) Blatt. & McC. in J. Bombay nat. Hist. Soc. 32: 23. 1927 & Bombay Grass. 20. 1935.

Herbs, 1.5-3.0 m high, erect, profusely branched on upper half. Leaves 22-40 x 1-2 cm, linear-lanceolate, petiolate. Racemes c 5 cm

long, compressed. Sessile spikelets c 0.7 cm long, awns longer, pedicelled spikelets longer than sessile ones, shortly awned.

Fls. & Frts. : October.

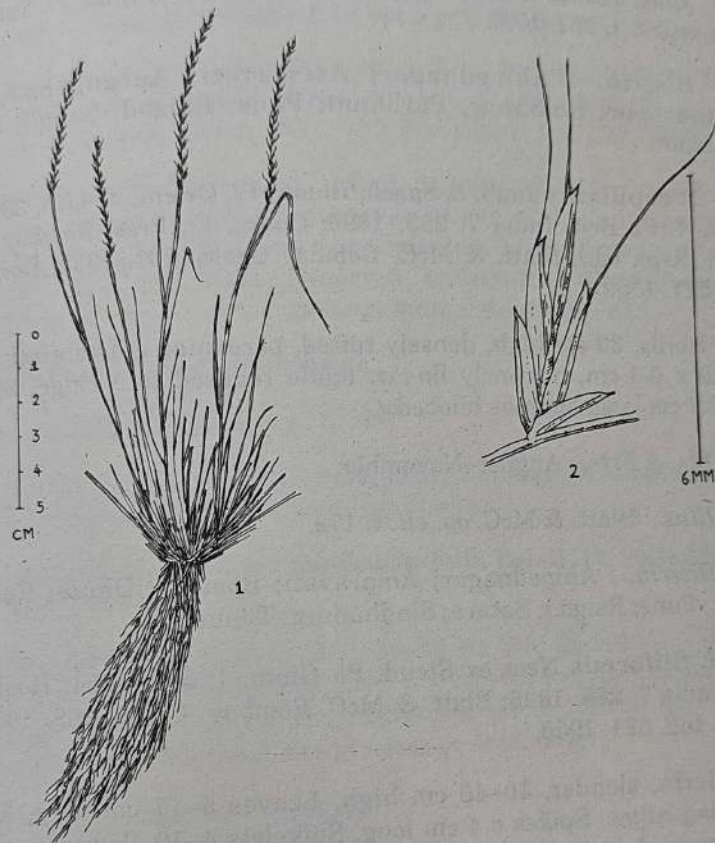
Illus. : Blatt. & McC. *op. cit.* t. 13.

Distrib. : Ahmednagar; Bombay; Dhule (Blatt. & McC. *op. cit.*); Nasik; Pune; Raigad; Sindhudurg; Thane.

### TRIPOGON R. & S.

- |  |     |                        |
|--|-----|------------------------|
| 1. Culms thickened below by persistent leaf-sheaths  | ... | <i>T. pungens</i>      |
| 1. Culms not as above :  |     |                        |
| 2. Lemmas cleft at apex into 4 lobes or with a definite lobe between each lateral awn and the median; outer lobes if present awned or not; inner membranous, sometimes short, truncate : |     |                        |
| 3. Median awn shorter than or nearly equal to lemma; stout grass; upper glume 2-fid  | ... | <i>T. bromoides</i>    |
| 3. Median awn twice as long as lemma or more; slender grass; upper glume 2-toothed below apex  | ... | <i>T. filiformis</i>   |
| 2. Lemmas cleft at apex into 2 lobes, awned in cleft; lobes awned or not :   |     |                        |
| 4. Median awn as long as or longer than lemma :  |     |                        |
| 5. Awn flexuous, capillary, several times as long as lemma   | ... | <i>T. capillatus</i>   |
| 5. Awn straight or curved, not more than twice as long as lemma  | ... | <i>T. trifidus</i>     |
| 4. Median awn shorter than lemma, occasionally almost absent :   |     |                        |
| 6. Leaves 30-60 x 0.4-0.8 cm, flat, sometimes rolled   | ... | <i>T. lisboae</i>      |
| 6. Leaves up to 20.0 x 0.1 cm, convolute :   |     |                        |
| 7. Lower glume 0.3-0.325 cm long, caudate-auminate at apex   | ... | <i>T. polyanthus</i>   |
| 7. Lower glume 0.4-0.5 cm long, entire or slightly notched at apex   | ... | <i>T. jacquemontii</i> |

*Tripogon bromoides* R. & S. Syst. Veg. 2: 600. 1817; Hook. f. Fl. Brit. India 7: 287. 1896; Blatt. & McC. Bombay Grass. 269. 1935; Bor, Grass. Ind. 521. 1960. *T. bromoides* var. *longifolius* Hook. f. *op. cit.* 288. *T. bromoides* var. *major* Stapf ex Hook. f. *op. cit.*



*Tripogon filiformis* Nees ex Steud.  
1. Habit 2. Spikelet

Herbs, perennial, tufted; culms 10–30 cm tall. Leaves 5–20 x 0.20 cm, convolute, glabrous or densely hairy. Spikes 5–15 cm or more long. Spikelets close, several flowered, 1 cm long; lemma ovate, 3–5-nerved, 2 inner lobes short, with arista from sinus, 2 outer short, bearing 0.9–1.5 cm long aristae. Grains 0.13–0.18 cm long, narrowly oblong.

*Fls. & Frts.* : July–December.

*Illus.* : Blatt. & McC. *op. cit.* t. 182; Matthew, *Illus. Fl. Tamilnadu Carnatic* 2. t. 951. 1982.

*Distrib.* : Ahmednagar; Amaravati; Aurangabad; Beed; Chandrapur; Kolhapur; Parbhani; Pune; Raigad; Sangli; Satara; Sholapur.

*T. capillatus* Jaub. & Spach. *Illustr. Pl. Orient.* 4: 47, t. 332. 1851; Hook. f. *Fl. Brit. India* 7: 285. 1896; Cooke, *Fl. Pres. Bombay* 3: 558. 1958 (Repr. ed.); Blatt. & McC. *Bombay Grass*. 267. 1935; Bor, *Grass. Ind.* 521. 1960.

Herbs, 30 cm high, densely tufted, perennial; culms erect. Leaves 15–20 x 0.3 cm, narrowly linear; ligule reduced to a ridge. Spikelets 0.5–0.7 cm long; lemmas bilobed.

*Fls. & Frts.* : August–November.

*Illus.* : Blatt. & McC. *op. cit.* t. 179.

*Distrib.* : Ahmednagar; Amaravati; Bombay; Dhule; Kolhapur; Nasik; Pune; Raigad; Satara; Sindhudurg; Thane.

*T. filiformis* Nees ex Steud. *Pl. Glum.* 1: 301. 1854; Hook. f. *Fl. Brit. India* 7: 288. 1896; Blatt. & McC. *Bombay Grass*. 269. 1935; Bor, *Grass. Ind.* 521. 1960.

Herbs, slender, 10–40 cm high. Leaves 5–17 cm long, filiform, equalling culms. Spikes c 4 cm long. Spikelets 4–10-flowered, c 0.4 cm long; lower glume ovate; upper glume lanceolate.

*Fls. & Frts.* : August–November.

*Distrib.* : Pune; Raigad; Satara.

*T. jacquemontii* Stapf in *Kew Bull.* 1892: 85. 1892; Hook. f. *Fl. Brit. India* 7: 286. 1896; Cooke, *Fl. Pres. Bombay* 3: 559. 1858 (Repr. ed.); Blatt. & McC. *Bombay Grass*. 267. 1935; Bor, *Grass. Ind.* 522. 1960.

Herbs, perenn  
filiform, convolu  
reddish-brown.

*Fls. & Frts.* :

*Illus.* : Blatt  
260, f. 79. 1980.

*Distrib.* : Co

*T. lisboae*  
*India* 7: 286. 18  
Blatt. & McC. B

Perennial  
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glabrous below  
glumes c 0.2  
upper half, up

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*Illus.* : B

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*T. poly*  
f. 1–6. (1973

Herbs,  
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long, 40–50

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Herbs, perennial, tufted, 30–45 cm high. Leaves 5.5–15.0 cm long, filiform, convolute. Spikes 20–25 cm long. Spikelets subterete, reddish-brown.

*Fls. & Frts.* : August–November.

*Illus.* : Blatt. & McC. *op. cit.* t. 181; Patunkar, Grass. Marathw. 260, f. 79. 1980.

*Distrib.* : Common throughout on open grasslands.

*T. lisboae* Stapf in Kew Bull. 1892: 84. 1892; Hook. f. Fl. Brit. India 7: 286. 1896; Cooke, Fl. Pres. Bombay 3: 558. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 267. 1935; Bor, Grass. Ind. 522. 1960.

Perennials, 45–60 cm tall, tufted. Leaves 12–35 x 0.4–0.6 cm, linear-lanceolate, scabrous on nerves above and along margins, glabrous below. Spikes 15–25 cm long. Spikelets 0.5–0.75 cm long; lower glumes c 0.2 cm long, ovate, 1-nerved, scaberulous along nerves in upper half, upper glumes c 0.3 cm long, lanceolate, 1-nerved.

*Fls. & Frts.* : October–November.

*Illus.* : Blatt. & McC. *op. cit.* t. 180.

*Distrib.* : Ahmednagar; Aurangabad; Bombay; Kolhapur; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

*T. polyanthus* Naik & Patunkar in Bull. Bot. Surv. India 15: 158, f. 1–6. (1973) 1976.

Herbs, perennial; culms tufted, 30–80 cm tall. Sheaths 1.5–3.0 cm long; ligule membranous. Leaves 3.0–7.5 x 0.2–0.3 cm, apex acuminate. Racemes spiciform, 15–18 cm long. Spikelets sessile, linear, 2.0–6.5 cm long, 40–50 or more flowered, dense, erect or ascending.

*Fls. & Frts.* : August–September.

*Illus.* : Naik & Patunkar, *op. cit.*

*Distrib.* : Rare, along stream banks and wet margins of tanks. Aurangabad.

*T. pungens* C.E.C. Fischer in Kew Bull. 1934: 170. 1934; Bor, Grass. Ind. 522. 1960.

Herbs, perennial; culms filiform, 6–10 cm tall, erect, simple, 2–3-noded. Sheaths compressed; ligule membranous. Leaves convolute or rolled, 1.0–2.5 cm long, glabrous or sparsely pilose, apex obtuse,

apiculate. Racemes spiciform, 2-5 cm long. Spikelets linear, 0.25-0.35 cm long, 5-7-flowered, distant or imbricate. Grains cylindric, c 0.05 cm long.

*Fls. & Frts.* : September-November.

*Distrib.* : Rare, in open grassland on rocky soils. Nanded.

**T. trifidus** Munro ex Stapf in Kew Bull. 1892: 85. 1892; Hook. f. Fl. Brit. India 7: 286. 1896; Bor, Grass. Ind. 524. 1960.

Herbs, 22-30 cm long. Leaves filiform, 12-20 cm long. Spikes 5-8 cm long, flat. Spikelets 4-5 cm long, 3-4-flowered, shortly pedicelled; lower glume lanceolate, acuminate, c 0.25 cm long; upper glume c 0.35 cm long; lemmas lanceolate, c 0.3 cm long. Grains oblong, c 0.15 cm long.

*Fls. & Frts.* : September.

*Distrib.* : Rare. Satara.

#### UROCHLOA P. Beauv.

- |   |     |                      |
|---|-----|----------------------|
| 1. Lower glume (when present) turned away from rachis of racemes or spikes, the back of upper lemma facing it, i.e. spikelets abaxial | ... | <i>U. panicoides</i> |
| 1. Lower glume turned towards rachis, the back of upper lemma turned away from it, i.e. spikelets adaxial                             | ... | <i>U. setigera</i>   |

**Urochloa panicoides** P. Beauv. Ess. Agrost. 53, t. 11, f. 1. 1812; Bor, Grass. Ind. 372. 1960; T.A. Cope in Nasir & Ali, Fl. Pak. 143: 209. 1982. *Panicum javanicum* Poir. in Lam. Encycl. 4: 274. 1816; Hook. f. Fl. Brit. India 7: 35. 1896; Cooke, Fl. Pres. Bombay 3: 450. 1958 (Repr. ed.). *Urochloa helopus* (Trin.) Stapf in Prain, Fl. Trop. Afr. 9: 595. 1920; Blatt. & McC. Bombay Grass. 146. 1935. *U. marathensis* Henr. in Meded Rijks.-Herb. Leiden 43: 2. 1922; Blatt. & McC. op. cit. *U. panicoides* var. *marathensis* (Henr.) Bor, op. cit. 373. *U. panicoides* var. *pubescens* (Kunth) Bor, op. cit. 372. *U. panicoides* var. *velutina* (Henr.) Bor, op. cit. 373. 'Padhya'.

Herbs, annual, 30-60 cm high, erect, basally or geniculately ascending, decumbent, rooting beneath. Leaves 2.5-12.5 x 0.5-1.2 cm, ovate-lanceolate or lanceolate, softly hairy on both sides. Panicles 5-6 cm long. Spikelets 0.2-0.4 cm long, lanceolate, ovoid-lanceolate or ovoid, glabrous or pubescent. Grains ellipsoid, compressed.

*Fls. & Frts.* : May-September.

*Illus.* : Bla f. 58. 1890; Ma 1982.

*Distrib.* :

*Notes.* : F of glabrous le gradations an united (Cope,

**U. seti** Blatt. & McC Bot. 4: 15. 1 Bombay 3: 4 in Hook. Ic.

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*Illus.* : Blatt. & McC. *op. cit.* t. 93; Patunkar, Grass. Marathw. 189, f. 58. 1890; Matthew, *Illus. Fl. Tamilnadu Carnatic* 2: tt. 951 & 954. 1982.

*Distrib.* : Common in all districts.

*Notes.* : Bor (*op. cit.*) recognized two varieties based on the nature of glabrous leaves and spikelets (var. *pubescens*). However, there are gradations and intermingling of these characters and so they have been united (Cope, *op. cit.*).

*U. setigera* (Retz.) Stapf in Prain, *Fl. Trop. Afr.* 9: 598. 1920; Blatt. & McC. *Bombay Grass*. 145. 1935. *Panicum setigerum* Retz. *Obs. Bot.* 4: 15. 1786; Hook. f. *Fl. Brit. India* 7: 36. 1896; Cooke, *Fl. Pres. Bombay* 3: 449. 1958 (Repr. ed.). *Brachiaria setigera* (Retz.) C.E. Hubb. in Hook. *lc. Pl.* 34: 2 subt. 3363. 1938; Bor, *Grass. Ind.* 286. 1960.

Herbs, 60–90 cm long, straggling; nodes bearded, the lower rooting. Leaves 3–10 x 1–2 cm, ovate-lanceolate; ligule a tuft of long wooly hairs. Panicles of 3–10 racemes, 2–5 cm long. Spikelets 0.25–0.3 cm long, 2-seriate, ovoid, acute or acuminate. Grains 0.24–0.26 cm long, ellipsoid.

*Fls. & Frts.* : July–December.

*Distrib.* : Amaravati; Aurangabad; Beed; Dhule (Blatt. & McC. *op. cit.*); Nagpur; Nanded; Osmanabad; Parbhani; Pune; (Cooke, *op. cit.*); Thane (Blatt. & McC. *op. cit.*).

#### VETIVERIA Bory de St.-Vincent

- |   |     |                       |
|---|-----|-----------------------|
| 1. Lower glume muriculate; joints and pedicels glabrous; callus of sessile spikelets glabrous   | ... | <i>V. zizanioides</i> |
| 1. Lower glume with a row of marginal tubercles which get bigger upwards, becoming spinulose; joints and pedicels with a basal tuft of hairs; callus of sessile spikelets bearded | ... | <i>V. lawsonii</i>    |

*Vetiveria lawsonii* (Hook. f.) Blatt. & McC. in *J. Bombay nat. Hist. Soc.* 32: 409. 1928 & *Bombay Grass*. 64. 1935; Bor, *Grass. Ind.* 258. 1960. *Andropogon lawsonii* Hook. f. *Fl. Brit. India* 7: 187. 1896.

Herbs, perennial, rhizomatous, 1.0–1.5 m tall; culms ascending. Leaves 10–45 x 0.3–0.4 cm, linear-lanceolate, rigid, subradical. Panicles 10–20 cm long, narrow, joints and pedicels within tufts of hairs. Sessile spikelets laterally compressed; lower glume narrowly ensiform with row of marginal tubercles, coriaceous; upper glume aristate; upper lemma with slender awn. Grains oblong.

*Fls. & Frts.* : October–December.

*Illus.* : Patunkar, Grass. Marathw. 119, f. 36. 1980.

*Distrib.* : Kolhapur; Nanded; Osmanabad; Ratnagiri; Satara.

**V. zizanioides** (L.) Nash in Small, Fl. S.E. U.S. 67. 1903; Blatt. & McC. Bombay Grass. 65. 1935; Bor, Grass. Ind. 258. 1960. *Phalaris zizanioides* L. Mant. 183. 1771. *Andropogon squarrosus* L. f. Suppl. Pl. 433. 1781 (*nomen confusum*); Hook. f. Fl. Brit. India 7:186. 1896; Cooke, Fl. Pres. Bombay 3: 511. 1958 (Repr.ed.). 'Khas-Khas', 'Ushir', 'Vala'.

Herbs, perennial, tufted up to 2 m high. Leaves 15 cm long, linear, margins ciliate. Panicles c 30 cm long; spikes 5.0–7.5 cm long, purple. Sessile spikelets 0.4–0.6 cm long, narrowly linear, lower glumes spinulose; pedicelled spikelets smaller, male.

*Fls. & Frts.* : September–October.

*Illus.* : Blatt. & McC. *op. cit.* t. 40; Mahesh. *Illus. Fl. Delhi* f. 275. 1966; Matthew, *Illus. Fl. Tamilnadu Carnatic* 2: tt. 955 & 956. 1982.

*Distrib.* : Bhandara; Bombay; Chandrapur; Kolhapur; Nagpur; Nasik; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Yavatmal.

YUSHANIA K. H. Keng

**Yushania wightiana** (Nees) R. Majumdar in Karthik. *et al.* Fl. Ind. Enum. Monocot. 283. 1989. *Arundinaria wightiana* Nees in Linnaea 9: 482. 1834; Lisboa in J. Royal Asiat. Soc. (Bombay) 15: 224. 1883; Gamble in Hook. f. Fl. Brit. India 7: 377. 1886; S. M. Almeida, Fl. Savantwadi 2: 111. 1990. 'Chivari'.

Shrubby, slender; culms 1.8–3.0 m or higher; nodes swollen. Leaves 12.5–17.5 x 2.0–2.5 cm, shortly petioled, apex long-acuminate, tessellate, base rounded or narrowed, margins incurved, scabrid, glabrous above, glaucescent beneath. Spikelets 3–5-fid, purple, glabrous or scabridly hirsute, in dense leafy spreading panicles, long-pedicelled.

*Flowers* : May.

*Distrib.* : Satara (Lisboa, *op.cit.*); Sindhudurg (S.M. Almeida *op. cit.*).

ZOYSIA Willd. (*nom. cons.*)

**Zoysia matrella** (L.) Merr. in Philipp. J. Sci. Bot. 7: 230. 1912; Bor, Grass. Ind. 684. 1960. *Agrostis matrella* L. Mant. Pl. 2: 185. 1771.

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*Zoysia pungens* Willd. in Ges. Naturf. Fr. Berlin, Neue Schr. 3: 441. 1801; Hook. f. Fl. Brit. India 7: 99. 1896; Cooke, Fl. Pres. Bombay 3: 537. 1958 (Repr. ed.). *Osterdamia matrella* (L.) O. Ktze. Rev. Gen. Pl. 2: 781. 1891; Blatt. & McC. Bombay Grass. 219. 1935.

Rhizomatous perennials, 10–15 cm tall, leafy shoots given out from rootstock. Leaves 2–4 x 0.2 cm, linear, glabrous on both sides, margins inrolled. Racemes solitary, 2.5–3.0 cm long. Spikelets 0.28–0.3 cm long, ovoid; lower glumes coriaceous, biconvex, 1-nerved, membranous at tip; upper glumes absent; lemmas c 0.22 cm long, hyaline, boat-shaped, 1-nerved.

Fls. & Frts. : August–September.

Illus. : Blatt. & McC. op. cit. t. 146; Matthew, Illus. Fl. Tamilnadu Carnatic 2: tt. 959 & 960. 1982.

Distrib. : Amaravati; Bombay; Raigad; Ratnagiri; Sindhudurg; Thane.

#### CULTIVATED SPECIES :

*Axonopus compressus* (Swartz) P. Beauv. Ess. Agrost. 12 (154): 167. 1812; Bor, Grass. Ind. 278. 1960. *Milium compressum* Swartz, Prodr. Veg. Ind. Occ. 24. 1788.

Annuals. Leaves elliptic-lanceolate. Spikes digitate.

Fls. & Frts. : April–May.

Illus. : Sreek. & Nair, Fl. Kerala–Grasses 217, pl. 44. 1991.

Distrib. : Popularly known as Carpet grass. Introduced and naturalised in India. Grows in patches near water courses in BSI garden at Pune.

*Euchlaena mexicana* Schrad. Ind. Sem. Hort. Goett. 1832: 3. 1832, reprinted in Linnaea 8, Litt.–Bericht, 25. 1833; Bor, Grass. Ind. 256. 1960.

A large and strong annual, c 3 m high.

Distrib. : Cultivated for fodder. Pune.

*Hordeum hexastichon* L. Sp. Pl. 85. 1753. *H. vulgare* L. var. *hexastichon* Aitch. Cat. Pb. & Sind. Pl. 171. 1869; Cooke, Fl. Pres. Bombay 3: 575. 1958 (Repr. ed.). 'Jau', 'Satu'.

Spikelets in 6 rows.

*Distrib.* : Rarely cultivated in fields for grains. Satara.

**Neyraudia arundinacea** (L.) Henr. in Meded. Herb. Leiden no. 58: 8. 1929 in Obs. ; Bor, Grass. Ind. 518. 1960. *Aristida arundinacea* L. Mant. Alt. 186. 1771. *Neyraudia madagascariensis* (Kunth) Hook. f. Fl. Brit. India 7: 305. 1896.

Perennials; culms 1.8–4.0 m high, solid, rather woody. Leaves 30–60 x 2.5 cm, margins smooth; sheaths polished; ligule a villous ridge. Panicles 30–90 cm long. Spikelets 0.6–0.75 cm long, pale-brown, 4–8-flowered.

*Fls.* : October.

*Distrib.* : Cultivated. Thane.

**Stenotaphrum dimidiatum** (L.) Brongn. in Duperr. Bot. Voy. Coq. 127. 1831; Bor, Grass. Ind. 366, f. 41. 1960. *Panicum dimidiatum* L. Sp. Pl. 57. 1753. *Stenotaphrum glabrum* Trin. Fund. Agrost. 176. 1822; Hook. f. Fl. Brit. India 7: 90. 1896.

Perennial herbs; culms 15–30 cm long, stoloniferous. Leaves distichous, 5–15 cm long, oblong. Racemes spiciform, 3–10 cm long.

*Fls. & Frts.* : July–December.

*Illus.* : Bor, *op. cit.*

*Distrib.* : Cultivated as a lawn grass. Kolhapur (Salunkhe, 1995); BSI garden at Pune.

**Triticum aestivum** L. Sp. Pl. 85. 1753; Blatt. & McC. Bombay Grass. 279. 1935; Bor, Grass. Ind. 679. 1960. *T. vulgare* Vill. Hist. Pl. Dauph. 2: 153. 1787; Hook. f. Fl. Brit. India 7: 367. 1896. *T. sativum* Lam. Fl. Franc. 3: 625. 1778; Cooke, Fl. Pres. Bombay 3: 574. 1958 (Repr. ed.). 'Gahu'.

Annuals, tufted, c 0.5 m high. Leaves 15–25 x 0.8–1.25 cm, linear-lanceolate, scaberulous, apex acute. Spikes terminal, subcompressed, 6–10 cm long. Spikelets 4–8 cm long, awned. Grains oblong, ventrally grooved, free within lemma and palea.

*Fls. & Frts.* : January–March.

*Distrib.* : Cultivated as food grain. Ahmednagar; Amaravati; Aurangabad; Kolhapur; Nagpur; Pune; Ratnagiri; Sangli; Satara; Sindhudurg.

*T. dicoccum* (Schränk) Schubler, Chor. Descr. Cerealium in Hort. Tubing. 29. 1818; Bor, Grass. Ind. 679. 1960. 'Gahu'.

Herbs, 70–120 cm high, annual. Leaves 1.0–1.5 cm wide, linear-lanceolate to lanceolate, apex acuminate. Spikes 5.0–12.5 x 0.8–1.2 cm. Spikelets crowded, laterally compressed in 2 rows on rachis. Grains entirely enclosed in lemma and palea and not readily separating. Coleoptile 4–6-nerved.

Fls. & Frts. : December–March.

Illus. : Patunkar, Grass. Marathw. 279, f. 85. 1980; Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: tt. 832 & 833. 1988.

Distrib. : Cultivated. Aurangabad; Nagpur; Osmanabad.

*T. durum* Desf. Fl. Atl. 1: 114. 1798; Bor, Grass. Ind. 679. 1960. *T. polonicum* L. ssp. *durum* (Desf.) A. Love in Feddes Rept. 95: 497. 1984. 'Gahu'.

Spikes 4–13 x 1–2 cm, slightly laterally compressed. Grains oblong narrow, acuminate. Coleoptile 2-nerved.

Fls. & Frts. : December–February.

Distrib. : Occasional in cultivation. Nagpur; Osmanabad.

*T. pilosum* Dalz. & Gibs. Bombay Fl. Suppl. 97. 1861. *T. sativum* Lam. var. *pilosum* T. Cooke, Fl. Pres. Bombay 2: 1052. 1906 [3: 575. 1958 (Repr. ed.)]. 'Bakshi', 'Kahno', 'Kala-Kusli'.

The outer glumes are covered with much soft tomentum.

Distrib. : Rarely cultivated for its grain. Satara.

*Zea mays* L. Sp. Pl. 971. 1753; Hook. f. Fl. Brit. India 7: 102. 1896; Cooke, Fl. Pres. Bombay 3: 574. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 2. 1935; Bor, Grass. Ind. 270. 1960. 'Bhutta', 'Maka'.

Annuals, c 3 m high, stout, monoecious. Male inflorescence terminal, in large panicles; female inflorescence solitary, axillary. Spikelets numerous, seated on a spongy axis.

Fls. & Frts. : July–October.

Illus. : Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 834. 1988.

Distrib. : Cultivated for food grain and for fodder throughout India. Ahmednagar; Amaravati; Kolhapur; Nagpur; Ratnagiri; Sangli; Satara; Sindhudurg; Thane.

ADDENDA & CORRIGENDA

DIOSCOREACEAE

Page 111 Line 36 Delete Cooke, *op. cit.* and shift Cooke, Fl. Pres. Bombay 3: 267. 1958 (Repr. ed.); from line 34 to here.

Page 141 *Allium cepa* L. & Page 142 *Allium sativum* L. should be shifted to family ALLIACEAE on Page 107 after *Agapanthus africanus*.

LILIACEAE

*Protasparagus karthikeyanii* Kamble in J. Econ. Tax. Bot. 19 : 735, fig. 1. (1995) 1996.

Stems terete; spines straight, pungent, branches generally, 3-5-nate, angular with ridges, branchlets also 3-5 nate, cladodes 3-6-nate, triquetrous. Flowers bisexual, few, laxly arranged on branches having 1-3 cladodes along with flowers; pedicels articulated just near base of flower; perianth segments elliptic, obovate.

*Fls. & Frts.* : May-August.

*Illus.* : Kamble, *op. cit.*

*Distrib.* : Rare. Pune.

*Notes* : This species differs from *P. racemosus* (Willd.) Obergm. (*Asparagus racemosus* Willd.) in a number of characters as tabulated (Kamble, *op. cit.* 735-738).

COMMELINACEAE

Page 181 Line 8 Add Cooke, Fl. Pres. Bombay 3 : 297. 1958 (Repr. ed.). after 1892;

ARECACEAE

Page 203 Under *Distrib.* of *Hyphaene dichotoma* add 'wild' before Raigad; Thane.

ARACEAE

*Amorphophallus konkanensis* Hett., Yadav & Patil in Blumea 39: 289, fig. 1. 1994.

Tuberous herbs; tubers globose or depressed-globose, producing rhizomatous offsets. Leaf solitary; petiole 29–88 cm long, lamina 40–96 cm in diam.; leaflets 4–19 x 1–4 cm, lanceolate, acuminate at apex. Inflorescences long-peduncled, spathes 3.3–8.5 x 2.3–7.0 cm, erect, outside dirty pinkish with a brownish hue and faint brownish spots, veins dark purplish-brown, inside maroon, base within dark maroon; spadix stipitate, 9.5–16.0 cm long. Female flowers congested; male flowers slightly distant. Berries ripen pinkish, 2–4-seeded; seeds subglobose.

Fls. & Frts. : April–June.

Illus. : Hett. *et al.*, *op. cit.*

Distrib. : Common on laterite soils, near bushes. Sindhudurg (Hett. *et al.*, *op. cit.*).

Notes : This species differs from *A. mysorensis* Barnes & Fischer in having semi-flattened staminodes and basal placentation. It also differs from *A. sylvaticus* (Roxb.) Kunth which has an axile placentation.

***Arisaema sahyadricum*** Yadav, Patil & Bachulkar in Willdenowia 23: 177, f. 1. 1993.

Herbs; corms globose with fibrous roots arising from upper side. Leaf solitary; petiole 14–35 cm long, sheathing base 3–4 cm long; leaflets 3–8, subpedate, 8–21 x 3–10 cm, obovate to oblong, acuminate at apex. Spathes 7–13 cm long, reddish-purple with vertical white striations; spadix sessile, 4.5–7.5 cm long, usually bisexual, sometimes unisexual and then usually staminate. Pistillate flowers many, compactly arranged; staminate flowers many, shortly stalked. Berries c 6 x 7 mm, 4–5-seeded, ripen red.

Fls. & Frts. : May–July.

Illus. : Yadav, *et al.*, *op. cit.*

Distrib. : Rare, found growing at an altitude of 800–1200 m around small bushes. Sindhudurg.

Notes : This species is closely related to *A. murrayi* as it has a similar vegetative morphology and a monoecious spadix but it differs in its uniformly reddish-purple spathe and the short, thick, blunt appendix included in the spathe.

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## LEMNACEAE

Page 232 Line 34 Add *Wolfia michelii* Schleid. Beitr. Bot. 1: 233. 1844; Cooke, Fl. Pres. Bombay 3: 344. 1958 (Repr. ed.). after 1771.

## ZANNICHELLICEAE

Page 242 Line 23 Add Cooke, Fl. Pres. Bombay 3: 351. 1958 (Repr. ed.); after 1893;

## ERIOCAULACEAE

*Eriocaulon bolei* Bole & Almeida.

Ansari & Balakrishnan (1994) do not mention about this species in their work.

*Eriocaulon breviscapum* Koern.

Endemic to Central and Peninsular India, in Karnataka, Madhya Pradesh and Orissa (Ansari & Balakrishnan, 1994).

*Eriocaulon brownianum* Mart. ex Wall. Pl. Asiat. Rar. 3: 25, t. 248. 1832; Hook. f. Fl. Brit. India 6: 576. 1893; Fyson in J. Indian Bot. 2: 262. 1921; Ansari & Balakr. Fam. Eriocaul. India 27, f. 5. 1994. *E. nilagirens* Steud. Syn. Pl. Glum. 2: 271. 1855. *E. brownianum* var. *nilagirens* Fyson, *op. cit.*

In India, this species is reported from Assam, Manipur and Meghalaya of N. Eastern India and from Western Ghats of Kerala and Tamilnadu (Ansari & Balakrishnan, *op. cit.* 29). Specimens identified earlier as *E. nilagirens* are identical with *E. brownianum* except for the more hairy nature of leaves and peduncles. So these two species are considered to be conspecific.

*Eriocaulon conica* (Fyson) C.E.C. Fischer.

Endemic to Peninsular India, in Karnataka, Kerala and Tamilnadu (Ansari & Balakrishnan, 1994).

*Eriocaulon cristatum* Mart.

This species is restricted to N.E. region in Assam & Meghalaya (Ansari & Balakrishnan, 1994).

*Eriocaulon eurypeplon* Koern. in Linnaea 27: 685. 1856; Hook. f. Fl. Brit. India 6: 585. 1843; Cooke, Fl. Pres. Bombay 3: 363. 1958 (Repr. ed.); Fyson in J. Indian Bot. 3: 17. 1922; Ansari & Balakr. Fam.

Eriocaul. India 86, f. 27. 1994. *E. vanheurckii* Muell.-Arg. in van Heurck. Obs. 2: 98. 1870; Sant. in Rec. Bot. Surv. India 16(1): 297. 1967 (3rd Rev.ed.); Kulkarni & Desai in J. Bombay nat. Hist. Soc. 69: 232. 1972. *E. bombayanum* Ruhl. in Engl. Pflanzenr. 4(30): 104. 1903; Cooke, op. cit. 362; Fyson, op. cit. *E. thomasi* Fyson, op. cit. 2: 318, t. 23. 1921; Sant. op. cit. 294. *E. indicum* Moldenke in Phytologia 3: 163. 1949; Sant. op. cit. 295. *E. vanheurckii* f. *minima* Moldenke, op. cit. 5: 84. 1955; Sant. op. cit. 297.

***E. fluvatile* Trim.**

Restricted to Kerala (Ansari & Balakrishnan, 1994).

***E. fysonii* Ansari & Balakr.** Fam. Eriocaul. India 89, f. 28. 1994. *E. cuspidatum* Dalz. var. *bracteata* Fyson in J. Indian Bot. 2: 318. 1921.

Acaulescent herbs. Leaves rosulate, up to 8 x 0.6 cm, oblong, cuspidate. Sheaths up to 10 cm long. Heads hemispherical, c 8 mm across, straw-coloured or white; involucre bracts chartaceous, straw-coloured; floral bracts hyaline, minutely hoary towards apex. Seeds oblong-ovoid, purple.

*Fls. & Frts.* : August–November.

*Illus.* : Ansari & Balakr. op. cit.

*Distrib.* : Scarce in moist places. Sindhudurg (Ansari & Balakr. op. cit.).

*Notes* : It is endemic to Karnataka and Maharashtra. It differs from *E. cuspidatum* in having longer involucre bracts, female sepals pilose, male sepals keeled at back and appendages of seeds dilated at apex.

***E. hamiltonianum* Mart.** in Wall. Pl. Asiat. Rar. 3: 29. 1832; Hook. f. Fl. Brit. India 6: 579. 1893 (quoad synonym under *E. oryzetorum*); Fyson in J. Indian Bot. 2: 313, t. 33. 1921; Ansari & Balakr. Fam. Eriocaul. India 122, f. 42. 1994.

Endemic to Central, E. and North–Eastern parts of India (Ansari & Balakrishnan, op. cit. p. 124).

***E. heterolepis* Steud.** Syn. Pl. Glum. 271. 1855; Hook. f. Fl. Brit. India 6: 585. 1893; Cooke, Fl. Pres. Bombay 3: 363. 1958 (Repr.ed.); Fyson in J. Indian Bot. Soc. 3: 16. 1922; Ansari & Balakr. Fam. Eriocaul. India 48, f. 14. 1994. *E. diana* Fyson, op. cit. 2: 259, t. 11. 1921; Kulkarni & Desai in J. Bombay nat. Hist. Soc. 69: 232. 1972. *E. diana* var. *longi-bracteata* Fyson, op. cit. 2: 259, t. 13. 1921; Kulkarni & Desai, op. cit.

*E. lanceolatu*  
Pl. Brit. India 6: f.  
(Repr.ed.); Fyson in  
Fam. Eriocaul. In  
Moldenke in Phyt  
16(1): 296. 1967 (3)

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Fam. Eriocaul. In  
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351. 1970; Kul  
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*E. lanceolatum* Miq. ex Koern. in Linnaea 27: 656. 1856; Hook. f. Fl. Brit. India 6: 577. 1893; Cooke, Fl. Pres. Bombay 3: 357. 1958 (Repr.ed.); Fyson in J. Indian Bot. 2: 266, t. 23. 1921; Ansari & Balakr. Fam. Eriocaul. India 29, f. 6. 1994. *E. lanceolatum* var. *pilosum* Moldenke in Phytologia 3: 164. 1949; Sant. in Rec. Bot. Surv. India 16(1): 296. 1967 (3rd Rev. ed.).

*E. leucomelas* Steud. Nomencl. Bot. 585. 1840; Ansari & Balakr. Fam. Eriocaul. India 174, f. 62. 1994. *E. melaleucum* Mart. in Wall. Pl. Asiat. Rar. 3: 29. 1832 non Bong. 1831; Hook. f. Fl. Brit. India 6: 574. 1839; Fyson in J. Indian Bot. Soc. 3: 18. 1922.

Endemic to Southern Western Ghats in Kerala and Tamilnadu. The wider distribution attributed earlier to the species is due to misidentification (Ansari & Balakrishnan, *op. cit.* 176).

*E. longicuspis* Hook. f. Fl. Brit. India 6: 573. 1893; Fyson in J. Indian Bot. 2: 308. 1921; Ansari & Balakr. Fam. Eriocaul. India 102, f. 33. 1994. *E. polycephalum* Hook. f. *op. cit.*; Moldenke in Phytologia 19: 351. 1970; Kulkarni & Desai in J. Bombay nat. Hist. Soc. 69: 233. 1972. *E. longicuspis* var. *polycephalum* (Hook.f.) Fyson, *op. cit.*

*E. meeboldii* Ansari & Balakr. Fam. Eriocaul. India 139, f. 48. 1994. *E. hamiltonianum* var. *minima* Fyson in J. Indian Bot. 2: 313. 1921.

Endemic to Western Ghats, Karnataka (Ansari & Balakrishnan, *op. cit.* p. 141).

*E. minutum* Hook. f. Fl. Brit. India 6: 579. 1893; Cooke, Fl. Pres. Bombay 3: 359. 1958 (Repr.ed.); Fyson in J. Indian Bot. 2: 317, t. 36. 1921; Ansari & Balakr. Fam. Eriocaul. India 143, f. 50. 1994. *E. humile* Moldenke in Phytologia 3: 162. 1949; Sant. in Rec. Bot. Surv. India 16 (1): 294. 1967 (3rd Rev. ed.).

*E. mitophyllum* Hook. f. Fl. Brit. India 6: 575. 1893; Ansari & Balakr. Fam. Eriocaul. India 159, f. 55. 1994. *E. miserum* Koern. var. *mitophyllum* (Hook.f.) Fyson in J. Indian Bot. Soc. 3: 15, t. 48. 1922.

Endemic to north-east India (Ansari & Balakrishnan, *op. cit.* p. 161).

*E. nepalense* Presc. ex Bong. in Acta Acad. Petrop. Sci. Math. 4: 1: 610. 1831; Hook.f. Fl. Brit. India 6: 581. 1893 p.p.; Fyson in J. Indian Bot. 2: 198, t. 6. 1921; Kulkarni & Desai in J. Bombay nat. Hist. Soc. 69: 232. 1972; Ansari & Balakr. Fam. Eriocaul. India 32, f. 7. 1994. *E. luzulaefolium* Mart. in Wall. Pl. Asiat. Rar. 3: 28. 1832; Hook. f. *op. cit.* 582; Cooke, Fl. Pres. Bombay 3: 360. 1958 (Repr. ed.); Fyson, *op. cit.* 200, t. 8; Naik in J. Indian Bot. Soc. 52: 111, f. 3. 1973.

**E. odoratum** Dalz. in Hook. Kew J. Bot. 3: 280. 1851; Hook. f. Fl. Brit. India 6: 574. 1893; Cooke, Fl. Pres. Bombay 3: 355. 1958 (Repr. ed.); Fyson in J. Indian Bot. 2: 308, t. 24. 1921; Ansari & Balakr. Fam. Eriocaul. India 43, f. 12. 1994. **E. collinum** Hook. f. *op. cit.* 584; Fyson, *op. cit.* 206; Kulkarni & Desai in J. Bombay nat. Hist. Soc. 69: 233. 1972.

**E. oryzetorum** Mart.

Restricted to Assam, Bihar, Sikkim and Uttar Pradesh (Ansari & Balakrishnan, 1994).

**E. parviflorum** (Fyson) Ansari & Balakr., Fam. Eriocaul. India 53, f. 18. 1994. **E. diana** var. *parviflora* Fyson in J. Indian Bot. 2: 260. 1921; Sant. in Rec. Bot. Surv. India 16(1): 294. 1967 (3rd Rev. ed.). **E. diana** var. *triloboides* Fyson, *op. cit.* 260, t. 15.

**E. richardianum** (Fyson) Ansari & Balakr. Fam. Eriocaul. India 51, f. 15. 1994. **E. diana** var. *richardiana* Fyson in J. Indian Bot. 2: 260, t. 14. 1921.

Endemic to Western Peninsular India (Karnataka and Kerala) (Ansari & Balakrishnan, *op. cit.* 53).

**E. robusto-brownianum** Ruhl. in Engl. Pflanzenr. 4(30): 77. 1903; Cooke, Fl. Pres. Bombay 3: 363. 1958 (Repr. ed.); Fyson in J. Indian Bot. 2: 264, t. 18. 1921; Naik in J. Indian Bot. Soc. 52: 111. 1953; Ansari & Balakr. Fam. Eriocaul. India 24, f. 4. 1994. **E. mysorens** Fyson in Kew Bull. 1914: 331. 1914.

Endemic to S. India (Ansari & Balakrishnan, *op. cit.* 25).

**E. setaceum** L. Sp. Pl. 87. 1753; Hook. f. Fl. Brit. India 6: 572. 1893; Cooke, Fl. Pres. Bombay 3: 354. 1958 (Repr. ed.); Fyson in J. Indian Bot. 2: 193, t. 1. 1921; Ansari & Balakr. Fam. Eriocaul. India 72, f. 23. 1994. **E. intermedium** Koern. in Linnaea 27: 69. 1856; Fyson, *op. cit.* 193.

Endemic to Western Peninsular India and Sri Lanka (Ansari & Balakrishnan, *op. cit.*).

**E. sharmae** Ansari & Balakr. Fam. Eriocaul. India 36, f. 9. 1994.

Acaulescent herbs. Leaves rosulate, up to 25 x 2 cm, oblong, obtuse or subacute. Peduncles many, up to 36 cm long. Heads globose, c 1 cm across, white; receptacles villous; involucre bracts obovate, straw-coloured; floral bracts oblanceolate, black. Seeds oblong, ellipsoid or globose, purple.

*Fls. & Frts.* : November onwards.

*Illus.* : Ansari & Balakr. *op. cit.*

*Distrib.* : Rare in open places. Sindhudurg.

*Notes* : It is allied to *E. robusto-brownianum* but differs by the number and structure of seed coat appendages, pilose involucre bracts and in the lanceolate sepals in female flowers.

*E. talbotii* Ansari & Balakr. Fam. Eriocaul. India 172, f. 61. 1994.  
*E. horsley-kundae* var. *megalocephala* Fyson in J. Indian Bot. Soc. 3: 14. 1922.

Acaulescent herbs. Leaves rosulate, linear-ensiform, up to 6 x 0.3 cm, acuminate. Peduncles few or many, up to 25 cm long. Heads spherical, c 1 cm across, grey or black; involucre bracts ovate, black; floral bracts oblanceolate, black. Seeds globose or ovoid, purple.

*Fls. & Frts.* : August–March.

*Illus.* : Ansari & Balakr. *op. cit.*

*Distrib.* : Common in varying habitats like grassy slopes, marshy river banks, dripping rocks, etc. Satara.

*Notes* : It differs from *E. ritchieanum* in having heads and involucre bracts broader, male sepals acute and seeds globose or ovoid.

*E. thwaitesii* Koern.

Confined to Southern parts of Western Ghats, in Kerala and Tamilnadu (Ansari & Balakrishnan, 1994).

*E. trilobum* Buch.–Ham. ex Koern. in Linnaea 27: 645. 1856; Hook. f. Fl. Brit. India 6: 583. 1893; Cooke, Fl. Pres. Bombay 3: 361. 1958 (Repr. ed.); Fyson in J. Indian Bot. 2: 206, t. 10. 1921; Ansari & Balakr. Fam. Eriocaul. India 46, f. 47. 1994.

*E. sollyanum* Royle (1839) which is homologous with *E. trilobum*, is illegitimate (Ansari & Balakrishnan, *op. cit.* 48). All specimens identified earlier as *E. gracile* Mart. are now corrected as *E. trilobum*. In this work what is treated under *E. infirmum* Steud. is *E. trilobum* only.

*E. rouxianum* Steud.

Ansari & Balakrishnan (1994) make a mention of this species under heading "Species not included in this study". It was earlier reported from Bombay. No specimen of this species is available in Indian Herbaria. Probably an extinct species.

## CYPERACEAE

Page 280 Line 30 Add *non* after *C. tegetiformis*

Page 280 Line 31 Add after Hook. f. *op. cit.*; Cooke, *op. cit.*

Page 287 Line 34 Add Cooke, Fl. Pres. Bombay 3 : 381. 1958 (Repr. ed.). after 607;

***Pycreus punctatus*** (Roxb.) Govind. in Proc. Indian Acad. Sci. (Pl. Sci.) 100: 426, f. 2. 1990. *Cyperus punctatus* Roxb. Fl. Ind. 1: 193. 1820; C.B.Cl. in Hook. f. Fl. Brit. India 6: 591. 1893 *pro syn.* (under *Pycreus nitens* Roxb.). *Cyperus pumilus* var. *punctatus* (Roxb.) C.B.Cl. in J. Linn. Soc. 21: 46. 1884.

Annuals; culms subtriquetrous, subcaespitose, 3–18 cm long. Leaves flat or canaliculate, abruptly acuminate or flexuous, scabrid towards apex, medianly keeled. Inflorescences simple or compound; rays 1–2; spikes ovoid or subglobose, dense with 15–20 spikelets. Spikelets oblong-ovoid. Nuts c 0.9 x 0.5 mm, ellipsoid, oblong-ovoid or obovoid, brownish-black, densely granulate, shining.

*Illus.* : Govind. *op. cit.*

*Distrib.* : Rare at an altitude of 240–540 m. Nanded.

*Notes* : This species differs from *Pycreus pumilus* in having leaves filiform; spikelets oblong-ovoid, usually sublaex, horizontally spreading; rachillae not raised, visible; glumes c 1 mm broad, lax; stamen 1; nuts 1/2 length of glumes.

***P. puncticulatus*** (Vahl) Nees in Mart. Fl. Bras. 2 : 10. 1842, in nota; C.B.Cl. in Hook. f. Fl. Brit. India 6 : 593. 1893. *Cyperus puncticulatus* Vahl, Enum. Pl. 2 : 348. 1806; Cooke, Fl. Pres. Bombay 3 : 371. 1958 (Repr. ed.).

Annuals; stems robust, 30 – 60 cm high, erect. Leaves as long as stem or shorter, 0.4 – 1.2 cm broad. Umbels simple or compound. Spikelets dark brown, 0.6 – 2.0 x 0.25 – 0.33 cm, linear or linear-oblong, compressed, 7–30-flowered.

*Distrib.* : Konkan (Cooke, *op. cit.*).

Page 376 Line 18 Add Cooke, Fl. Pres. Bombay 3 : 418. 1958 (Repr. ed.); after 1874;

## POACEAE (GRAMINEAE)

## ACROCERAS Stapf

\***Acroceras munroanum** (Balansa) Henr. in Blumea 3: 445. 1940; Bor, Grass. Ind. 275. 1960. *Panicum munroanum* Balansa in Morot, J. de Bot. 4: 140. 1890. *Panicum latifolium sensu* Hook. f. Fl. Brit. India 7: 39. 1896 non L. 1753.

Annual or perennial herbs; culms subcompressed, 15–50 cm long, creeping, prostrate below, rooting at lower nodes. Leaves 2.0–7.5 x 0.3–0.8 cm, lanceolate, apex acuminate, base rounded, margins scaberulous. Panicles 2.5–9.0 cm long, racemes 4–6. Spikelets 3.8–4.5 x 1.8–2.0 mm, ellipsoid. Grains 1.8–2.0 x 1.0–1.2 mm, ellipsoid.

Fls. & Frts. : October–December.

Distrib.: Rare in moist shady places. Sindhudurg (Salunkhe, 1995).

\***Chrysopogon zeylanicus** (Nees ex Steud.) Thw. Enum. Pl. Zeyl. 366. 1864; Bor, Grass. Ind. 119. 1960. *Andropogon zeylanicus* Nees ex Steud. Syn. Pl. Glum. 1: 397. 1854; Hook. f. Fl. Brit. India 7: 192. 1896.

Perennial herbs; culms tufted, 40–100 cm high. Leaves 8–25 x 0.3–0.8 cm, linear or linear-lanceolate, tubercled hairy near base and mouth, apex muticous, margins spinulosely serrulate in the upper half. Panicles 8–20 cm long, open, oblong-ovoid to pyramidal. Sessile spikelets linear or linear-oblong; pedicelled spikelets linear-lanceolate.

Fls. & Frts. : August–October.

Distrib.: Rare in open grasslands at high altitudes (Salunkhe, 1995).

\***Cyrtococcum muricatum** (Retz.) Bor, Grass. Ind. 291. 1960. *Panicum muricatum* Retz. Obs. Bot. 4: 18. 1786.

Annual herbs; culms 15–45 cm long, creeping or decumbent at base, rooting at lower nodes. Leaves 1–8 x 0.4–1.2 cm, ovate-lanceolate or elliptic-lanceolate, softly villous with minute tubercle based hairs, apex acute to acuminate, base sparsely ciliate, margins scaberulous. Panicles 5–18 x 5.0–6.5 cm, lax. Spikelets obovoid. Grains 1.0–1.2 mm long, obovoid.

Fls. & Frts. : August–September.

Distrib.: Rare along the margins of forests in deep shady places. Satara (Salunkhe, 1995).

Page 445 Line 23 Add after *aegyptius* L. Sp. Pl. 72.1753.  
*Eleusine aegyptia*

Page 454 Line 1 Add *Andropogon ensiformis* Hook. f. *op. cit.* 175;  
Cooke, *op. cit.* 499. after (Repr. ed.).

***Dichanthium paranjpyeanum*** (Bhide) W.D. Clayton in Kew Bull. 32: 579. 1978. *Andropogon paranjpyeanus* Bhide in J. Proc. Asiat. Soc. Bengal (n.s.) 7: 514. 1911. *Eremopogon paranjpyeanus* (Bhide) Blatt. & McC. in J. Bombay nat. Hist. Soc. 32: 427. 1928 & Bombay Grass. 97. 1935. *Schizachyrium paranjpyeanum* (Bhide) Raiz. & Jain in Proc. Indian Sci. Congr. Abs. 3: 130. 1953; Bor, Grass. Ind. 216. 1960; Kulkarni & Wadhwa in J. Bombay nat. Hist. Soc. 70: 238. 1973.

Page 484 Line 4 Add Cooke, *op. cit.* 547. after 1896.

Page 495 Line 8 Add Cooke, Fl. Pres. Bombay 3 : 467. 1958 (Repr. ed.). after 1896.

Page 534 Line 17 Add Cooke, Fl. Pres. Bombay 3 : 564. 1958 (Repr. ed.); after 1896;

**\**Oplismenus undulatifolius*** (Ard.) R. & S. Syst. Veg. 2: 482. 1817 non P. Beauv. 1812 (*nom. nud.*); Hook. f. Fl. Brit. India 7: 66. 1896; Bor, Grass. Ind. 318. 1960. *Panicum undulatifolium* Ard. Animad. Spec. Alt. 14: t. 4. 1764.

Annual or perennial herbs; culms 30–110 cm tall, decumbent or creeping below, rooting at lower nodes. Leaves 2–12 x 0.6–2.0 cm, ovate-lanceolate, sparsely pilose near base, scaberulous. Panicles 9–20 cm long. Spikelets crowded, fascicled, 2-nate, ovoid-lanceolate. Grains oblong-ellipsoid.

*Fls. & Frts.* : September–November.

*Distrib.* : Rare in shady places along roadsides in ghats. Satara (Salunkhe, 1995).

Page 550 Line 3 Add Cooke, Fl. Pres. Bombay 3 : 454. 1958 (Repr. ed.); after 1896;

**\**Setaria paniculifera*** (Steud.) Fourn. ex Hemsl. in Biol. Centr. Amer. Bot. 3: 505. 1885; Bor, Grass. Ind. 363. 1960. *Panicum paniculiferum* Steud. Syn. Pl. Glum. 1: 54. 1854.

Perennial herbs; culms tufted, 60–210 cm high, sparsely bearded at nodes. Leaves 15–40 x 1.0–4.5 cm, elliptic-lanceolate or elliptic-oblong, apex acuminate, base narrowed, margins scaberulous. Panicles pyramidal, 30–50 cm long. Spikelets ellipsoid-lanceolate or broadly ovoid-ellipsoid. Grains 1.8–2.0 mm long, broadly ovoid-ellipsoid.

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*Fls. & Frts.* : July–September.

*Distrib.* : Rare along the banks of streams and in shady places. Satara (Salunkhe, 1995).

*Note* : This grass is originally from Trop. America (Bor. *op. cit.*). Karthik. *et al.* (1989) reported it from E. India.

SINARUNDINARIA Nakai

*Sinarundinaria wightiana* (Nees) Chao & Renv. in Kew Bull. 44: 356. 1989. *Arundinaria wightiana* Nees in Linnaea 9: 482. 1834; Lisboa in J. Roy. Asiat. Soc. (Bombay) 15: 224. 1883; Gamble in Hook. f. Fl. Brit. India 7: 377. 1896; S. M. Almeida, Fl. Savantwadi 2: 111. 1990. *Yushania wightiana* (Nees) R. Majumdar in Karthik. *et al.* Fl. Ind. Enum. Monocot. 283. 1989. 'Chivari'.

Page 614 Line 8 Add Cooke, Fl. Pres. Bombay 3 : 540. 1958 (Repr. ed.); after 1841;

TRICHOLAENA Schrad. ex J. A. & J. H. Schult.

\**Tricholaena teneriffae* (L. f.) Link, Handb. Erkenn. Gewachse 1: 91. 1829; Hook. f. Fl. Brit. India 7: 65. 1896; Cooke, Fl. Pres. Bombay 3: 440. 1958 (Repr.ed.); Blatt. & McC. Bombay Grass. 176. 1935; Bor. Grass. India 369. 1960. *Saccharum teneriffae* L.f. Suppl. 106. 1781.

Perennial herbs; culms tufted, 20–60 cm tall, ascending or geniculate at base from woody root stock. Leaves 1.5–7.0 x 0.15–0.4 cm, convolute, linear–lanceolate, apex finely acuminate. Panicles ovoid–oblong, lax, 5–12 cm long. Spikelets ovoid–lanceolate.

*Fls. & Frts.* : September–December.

*Distrib.* : Rare on rocky hill slopes. Satara (Salunkhe, 1995).

*Note* : Reported from N.W. India by Bor. *op. cit.* and Karthik. *et al.* 1989. Cooke (*op. cit.*) reported it from Sind only.

Page 625 Line 18 & 19 Delete *Andropogon cookei* (Stapf) Stapf ex Woodr. in J. Bombay nat. Hist. Soc. 13 : 438. 1901.

\*Specimens not seen.

★ ★ ★

## EMENDANDA

Page	Line	For	Read
		NERVILEA	NERVILIA
8	17	thick,	thick,
15	1	Fosb.	& Fosb.
17	32	herbsacea	herbacea
30		'Chickurkanda'.	'Chichurkanda'.
38	15	Nagpur;	Nagpur; Nasik;
41	11	( <i>L. teretifolium</i> );	( <i>C. teretifolium</i> );
47	13	Shah and	Shah &
53	13	Kolhapur-	Kolhapur;
55	11	solidary,	solitary,
62	19	<i>C. aromatics</i>	<i>C. aromatica</i>
72	19	Salisbs.	Salisb.
73		'Ram Haldi',	'Ran Haldi',
76	21	lightly	slightly
85	33	'Elachi'.	'Elaichi'.
86	35	leafy	on leafy
87	1	'Plykand'.	'Piyukand'.
96	21	A. Ansari	R. Ansari
96	32	coloned,	coloured,
101	30	<i>integrifolia</i>	<i>integrifolia</i>
107	22	'Paiz'.	'Piaz'.
141	28	epiphytic	epiphytic
148	18	<i>Murdannia</i>	<i>Murdannia versicolor</i>
179		<i>versicolor</i> (Dalz.)	(Dalz.) Brueck.
		Brueck.	1. Habit 2. Fruit
		<i>Rheo</i>	<i>Rhoeo</i>
183	5	ornamental	ornamental. Bombay
198	9	'Ravan-tal'.	'Ravan-tad'.
202	last	spather	spathes
215	17	<i>Eriocaulon h</i>	<i>Eriocaulon</i>
256		<i>luzulifolium</i>	<i>luzulaefolium</i>
257	30	<i>Eriocaulon h</i>	<i>Eriocaulon</i>
258		<i>Trighutia</i>	<i>Trithuria</i>
269	27	numerouts,	numerous,
269	30	rd.	red.
269	31	flowers	Flowers
269	33	0.8-1.0 cm,	0.8-1.0 cm broad,
285	5	3. glume	3. Glume
286		uaually	usually
287	25	<i>chaeteria</i>	<i>chaetaria</i>
299	32		

307	11	296.	396.
313	6	ovoide-	ovoid-
313	24	Tax. -Bot.	Tax. Bot.
321	27	0-.025 cm.	0.025 cm.
327	6	<i>pseudokyllingiodes</i>	<i>pseudokyllingioides</i>
345	28	Reichb.	Reichb. f.
378	2	4. Stamens	4. Stamens 6
383	25	laterally	laterally
390	5	'Tamabadgota'.	'Tambadgota'.
390	17	Back.	Hack.
392	9	than	then
402	27	'Faradyachne gavat',	'Faradyache gavat',
419	8	Drshpande	Deshpande
421	last	'Ohaman'.	'Dhaman'.
427	35	bulbours	bulbous
431	27	upper ;	upper
461	33	<i>pedicellaria</i>	<i>pedicellaris</i>
464		1. Herbs	1. Habit
472	24	Neitr,	Neilr.,
480	11	recemes :	racemes :
482		3. Nut	3. Grain
502	13	Chats	Ghats
505	15	roccordcd	recordcd
524	20	Strip.	Stirp.
545	28	'Tandule'.	'Tandul'.
579	34	('Rhychelythrum')	('Rhynchelythrum')
590	17	hary.	hairy.
590	25	Prabhani.	Parbhani.
594		<b>Setaria plicate</b>	<i>Setaria plicata</i>
595	5	(Salkunkhe,	(Salunkhe,
605	1	<b>durra var. cois</b>	<b>durra var. eoie</b>
609	36	<i>S. ioclados</i>	<i>S. ioclados</i>
614	8	<b>S. ioclados</b>	<b>S. ioclados</b>
614	9	<i>Vilfa ioclados</i>	<i>Vilfa ioclados</i>
634	26	'Gahu'.	'Gehu'.
635	14	'Gahu'.	'Gehu'.
638	22	80.	80:
656	25	key	Key
663	17	natnralized	naturalized
664	34	Steinhil	Steinhil
704	8	Peaninsular	Peninsular
709	15	Parndear,	Parandekar,
718	5	<i>Utrriculaia</i>	<i>Utricularia</i>
729	1	ethnobotanical	Ethnobotanical

ACAMPE  
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**FLORA OF MAHARASHTRA STATE  
MONOCOTYLEDONES**



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**Flora of India  
Series 2**

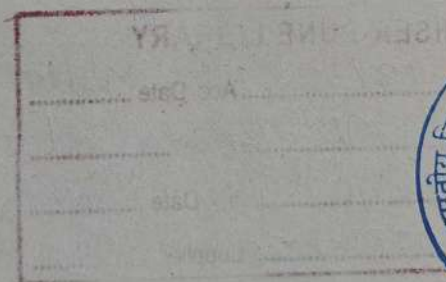
# **FLORA OF MAHARASHTRA STATE**

Editors

B. D. Sharma, S. Karthikeyan  
and  
N. P. Singh

## **MONOCOTYLEDONES**

P. Lakshminarasimhan



**BOTANICAL SURVEY OF INDIA**

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## FOREWORD

The Botanical Survey of India since its re-organisation in 1954 has been engaged in floristic survey of unexplored and under-explored parts of the country. From early 1980s, the department has started the publication of **Flora of India** under four series; Series 1 on the National Flora comprising taxonomic revisions of families, tribes and genera—primarily—of flowering plants for the whole country; Series 2 on the floristic inventories of different States/Union territories; Series 3 pertaining to the floras of important districts and Series 4 to include special publications.

Cooke's **Flora of the Presidency of Bombay** (1901–1908) continues till today to be the most important floristic work for identification of the species that would be collected in the localities of the erstwhile Bombay Presidency viz., parts of Gujarat, Maharashtra, Goa, North Kanara and Sind which is now in Pakistan. However, this work has become obsolete due to changes in the regional boundaries and changing patterns of flora. Since its publication nearly 1000 species have been added to Cooke's **Flora** which include many new species. Therefore, revising and rewriting this flora on modern lines has become an absolute necessity. The flora of Maharashtra is very varied and interesting. Vegetation of N.W. Ghats – **Sahyadris** – has captured the imagination of many scientists and environmentalists. At the same time the vegetation of Deccan, Marathwada and Vidarbha regions also have their own interesting floristic features.

It is proposed to bring out the rich floristic account of this state in 3–4 volumes. The need to publish this **Flora** cannot be over-emphasised. Cooke (*op. cit.*) described for monocots alone, 23 families, 164 genera, 431 species, 1 subspecies and 10 varieties of wild species. In the present **Flora** 34 families, 256 genera, 904 species, 2 subspecies, 39 varieties, 1 subvariety and 1 forma of wild plants are being described (the increase in the number of families is due to the changed concepts and addition of the family – Hydatellaceae). Some other salient features brought out by this work are, that, for monocots alone, 10 new genera, 84 species, 11 subspecies and 1 variety have been described from Maharashtra; 330 species, 1 subspecies and 13 varieties have been recorded as new since publication of Cooke's *Flora*. Further,

2 genera and 303 species have undergone name changes. A total of 120 species and 23 varieties are being cultivated in the state. Nearly 77 species and 2 varieties of monocots are endemic to Maharashtra. Line drawings of 144 plants and 8 colour photographs have also been given. An exhaustive bibliography has been provided to help in further study of plants of this region.

The portion containing Dicotyledones of Maharashtra is in press and will be published shortly.

It is hoped that this **Flora** will be useful to the students, nature lovers, environmentalists, foresters and others interested in identification, conservation and utilisation of plant resources of Maharashtra State.

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Calcutta - 700 001.

**P. K. HAJRA**  
Director

January, 1996.

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We wish to record our appreciation to our colleagues :

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- \* Sarvasree K.M. Rao and A.N. Londhe, Scientific Assistants, C.R. Jadhav and D.L. Shirodkar, Jr. Sci. Assistants who assisted in first proof reading and arranging bibliographic entries.
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- \* Sarvasree R.R. Mohare and S.D. Kadam, Senior and Junior Artists respectively, prepared the illustrations.
- \* All scientists and staff particularly the field staff of Western Circle, Pune for help and co-operation.
- \* Forest Department, Maharashtra State for help in the field studies.
- \* Authorities of Blatter Herbarium (BLAT), Bombay for permitting herbarium consultation.
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★ ★ ★

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## HYDROCHARITACEAE

1. Salt water plants ... HALOPHILA
1. Fresh water plants :
  2. Stems branched, leafy throughout:
    3. Leaves in whorls; perianth double; stamens 3; style undivided ... HYDRILLA
    3. Leaves alternate; perianth single; stamens 2; style notched ... LAGAROSIPHON
  2. Stemless or stoloniferous; leaves radical :
    4. Petioles distinct; spathes winged ... OTTELLIA
    4. Petioles indistinct; spathes not winged :
      5. Perianth single; peduncle of female spathes spirally coiled ... VALLISNERIA
      5. Perianth double; peduncle not as above ... BLYXA

### BLYXA Noron. ex Petit-Thou.

1. Flowers unisexual; stamens 9 ... *B. octandra*
1. Flowers bisexual; stamens 3 :
  2. Seeds with 8 rows of blunt spines, with a 0.1–0.5 cm long filiform tail at both ends ... *B. echinosperma*
  2. Seeds with 8 rows of more or less tubercled ribs, without filiform processes ... *B. aubertii*

***Blyxa aubertii*** Rich. in Mem. Inst. Paris 12, 2: 19, 23, 77, t. 4. 1812; Hartog in Steenis, Fl. Males. 1, 5: 390, t. 5. 1957; Subr. Aquat. Ang. 59. 1962; Hemadri in Indian Forester 94: 810. 1968. *B. oryzetorum* (Decne.) Hook. f. Fl. Brit. India 5: 661. 1888. *B. griffithii* Planch. ex Hook. f. *op.cit.* p.p. *B. ceylanica* Hook. f. *op.cit.*

Herbs, monoecious. Leaves 15–20 x 0.5–1.0 cm, linear, 5–7-nerved, sheathed at base. Flowers in 1-flowered, tubular spathes; spathes 4–6 cm long, tip obtuse. Fruits cylindrical, c 6 cm long. Seeds many, 0.15–0.20 cm long, ellipsoid to ovoid.

**Fls. & Frts.** : August–February.

**Illus.** : Hartog in Steenis, *op.cit.*; Subr. *op.cit.* 152, f. 40.

**Distrib.** : Submerged hydrophytes in stagnant water pools. Chandrapur; Pune; Ratnagiri; Satara; Sindhudurg.

***B. echinosperma*** (C. B. Cl.) Hook. f. Fl. Brit. India 5: 661. 1888; Cooke, Fl. Pres. Bombay 3: 172. 1958 (Repr. ed.); Hartog in Steenis, Fl.

Males. 1, 5: 391, f. 6a. 1957; Subr. Aquat. Ang. 59. 1962. *Hydrotopus echinospermus* C. B. Cl. in J. Linn. Soc. Bot. 14: 8, t. 1. 1875. *Blyxa echinospermoides* Blatt. in J. Proc. Asiat. Soc. Beng. (N. S.) 26: 354. 1931. *B. lancifolia* Hook. f. *op.cit.* *B. talbotii* Hook. f. *op.cit.*

Herbs, annual. Leaves 10–20 cm long, sheathing at base. Flowers white, in 1-flowered spathes. Fruits 3.5–7.0 cm long, linear, ribbed. Seeds oblong.

Fls. & Frts. : July–December.

Illus. : Hartog in Steenis, *op.cit.*; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 684. 1982.

Distrib. : Submerged hydrophytes in stagnant water pools. Bombay; Raigad; Satara; Sindhudurg.

**B. octandra** (Roxb.) Planch. ex Thw. Enum. Pl. Zeyl. 332. 1864; Hartog in Steenis, Fl. Males. 1, 5: 392, f. 6b. 1957; Subr. Aquat. Ang. 60. 1962. *Vallisneria octandra* Roxb. Pl. Cor. 2: 34, t. 165. 1802. *Blyxa roxburghii* Rich. in Mem. Inst. Paris 12, 2: 77, t. 5. 1812; Hook. f. Fl. Brit. India 5: 660. 1888; Cooke, Fl. Pres. Bombay 3: 172. 1958 (Repr. ed.). *B. griffithii* Planch. ex. Hook. f. *op.cit.* p.p.

Herbs, gregarious. Leaves 20–35 cm long, linear, sheathing, narrowed at base. Flowers white; male spathes enclosing 5–10 flowers; female spathes 1-flowered. Capsules linear, finely ribbed. Seeds oblong-ellipsoid, white.

Fls. & Frts. : June–February.

Illus. : Hartog in Steenis, *op. cit.*; Subr. *op cit.* 153, f. 41; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 684 & 977a. 1982.

Distrib. : Submerged hydrophytes in stagnant water pools. Bhandara; Chandrapur; Kolhapur; Pune; Satara; Sindhudurg.

#### HALOPHILA Petit–Thou.

- |  |     |                     |
|--|-----|---------------------|
| 1. Lateral shoots scarcely or not developed, glabrous; leaf margins entire; plants dioecious | ... | <i>H. ovalis</i>    |
| 1. Lateral shoots 0.5–1.0 cm long, hairy; leaf margins serrulate; plants monoecious          | ... | <i>H. decipiens</i> |

**Halophila decipiens** Ostenf. in Bot. Tidsskr. 24:260.1902; Dixit in J. Bombay nat. Hist. Soc. 36: 284. 1932; Hartog in Steenis, Fl. Males. 1, 5: 410, f. 18. 1957.

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Herbs; stems thin. Leaves 1.0–2.3 x 0.3–0.6 cm, oblong-elliptic, apex obtuse or rounded, base cuneate, faintly covered with short unicellular hairs on one or both sides. Spathes ovate, tearing at top as fruit is ripening, containing 1 male and 1 female flower, spathe segments enclosing female flower embracing the other. Fruits c 0.25 x 0.15 cm, broadly ellipsoid, beak 0.15–0.2 cm long. Seeds c 30, ovate.

*Fls. & Frts.* : January.

*Illus.* : Hartog in Steenis, *op. cit.*

*Distrib.* : Rare along coasts of Bombay.

**H. ovalis** (R. Br.) Hook. f. *Fl. Tasm.* 2: 45. 1858; Dixit in *J. Bombay nat. Hist. Soc.* 36: 284. 1932; Hartog in Steenis, *Fl. Males.* 1, 5: 408, f. 16. 1957; Subr. *Aquat. Ang.* 62. 1962. *Caulina ovalis* R. Br. *Prodr.* 1: 339. 1810. *Halophila ovata sensu* Hook. f. *Fl. Brit. India* 5: 663. 1888 *non* Gaud. 1829.

Herbs, slender, creeping. Leaves opposite, up to 7.5 x 1.0 cm, linear-oblong to ovate, palminerved; stipular scales 2, convolute. Spathes sessile, solitary, bracteate. Male flowers pedicelled; female usually sessile. Fruits ovate or subglobose, included, beaked. Seeds ovoid, finely reticulate.

*Fls. & Frts.* : January.

*Illus.* : Hartog in Steenis, *op. cit.*; Subr. *op. cit.* 156, f. 44; Matthew, *Illus. Fl. Tamilnadu Carnatic* 2: t. 685. 1982.

*Distrib.* : Rare. Bombay.

#### HYDRILLA L.C. Rich.

**Hydrilla verticillata** (L. f.) Royle, *Ill. Bot. Himal.* t. 376. 1839; Hook. f. *Fl. Brit. India* 5: 659. 1888; Cooke, *Fl. Pres. Bombay* 3: 170. 1958 (Repr. ed.); Hartog in Steenis, *Fl. Males.* 1, 5: 385, f. 1. 1957; Subr. *Aquat. Ang.* 55. 1962. *Serpicula verticillata* L. f. *Suppl.* 416. 1781. *Hydrilla polysperma* Blatt. in *J. Proc. Asiat. Soc. Beng. (N.S)* 26: 356. 1931. 'Sheval'.

Herbs, slender, submerged, free floating or rooting, c 45 cm long; roots fibrous. Leaves 3–8, 0.6–1.5 cm long, linear or linear-oblong, apex apiculate, margins entire or serrulate. Flowers unisexual, white; male flowers minute, shortly pedicelled, solitary, in subsessile, subglobose, muricate spathes; female flowers sessile, solitary in cylindrical, membranous spathes. Fruits smooth, muricate. Seeds oblong.

*Fls. & Frts.* : August–February.

*Illus.* : Hartog in Steenis, *op.cit.*; Subr. *op. cit.* 149, f. 37; Mahesh. *Illus. Fl. Delhi* f. 200. 1966; Matthew, *Illus. Fl. Tamilnadu Carnatic* 2: t. 686. 1982.

*Distrib.* : In ponds and tanks. Ahmednagar; Amaravati; Bombay (Cooke *op.cit.*); Kolhapur; Nagpur; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane; Yavatmal.

LAGAROSIPHON W. H. Harvey

*Lagarosiphon alternifolia* (Roxb.) Druce in Rep. Bot. Exch. Cl. Brit. Is. 1916: 630. 1917; Govind. in Proc. Indian Acad. Sci. (Pl. Sci.) 93: 15. 1984. *Vallisneria alternifolia* Roxb. Pl. Cor. 2: t. 165. 1802 & Fl. Ind. 3: 750. 1832. *Nechamandra alternifolia* (Roxb.) Thw. Enum. Pl. Zeyl. 332. 1864; Subr. & Balakr. in Bull. Bot. Surv. India 3: 23. 1961; Subr. Aquat. Ang. 56. 1962. *Lagarosiphon roxburghii* (Planch.) Bth. in Bth. & Hook. f. Gen. Pl. 3: 451. 1883; Hook. f. Fl. Brit. India 5: 659. 1888; Cooke, Fl. Pres. Bombay 3: 170. 1958 (Repr. ed.).

Herbs, c 15 cm high, perennial, submerged, lower portion tightly adhering to substratum with fibrous roots, upper portion floating. Leaves linear-lanceolate, acute, often twisted. Male spathes ovate, axillary, sessile, paired, 2-valved; female flowers solitary, axillary, sessile. Fruits ovoid, oblong or linear. Seeds numerous.

*Fls. & Frts.* : August–February.

*Illus.* : Subr. *op.cit.* 150, f. 38; Matthew, *Illus. Fl. Tamilnadu Carnatic* 2: t. 687. 1982 (*Nechamandra alternifolia*).

*Distrib.* : In ponds and tanks. Nagpur; Pune; Raigad; Thane; Yavatmal.

OTTELIA Pers.

*Ottelia alismoides* (L.) Pers. Syn. Pl. 1: 400. 1805; Hook. f. Fl. Brit. India 5: 662. 1888; Cooke, Fl. Pres. Bombay 3: 173. 1958 (Repr. ed.); Hartog in Steenis, Fl. Males. 1,5: 398, f. 10. 1957; Subr. Aquat. Ang. 61. 1962. *Stratiotes alismoides* L. Sp. Pl. 535. 1753.

Herbs, annual, submerged, flaccid. Leaves of two kinds; submerged leaves shortly petioled, narrow or oblong, tapering to base; floating ones oblong or orbicular, cordate or rounded at base, then narrowed into angled petiole, up to 18 cm in diam., 7–11-nerved,

margins undulate. Flowers white with yellow blotched base. Fruits 2.0–3.5 cm long, ellipsoid. Seeds oblong–fusiform.

*Fls. & Frts.* : September–April.

*Illus.* : Hartog in Steenis, *op.cit.*; Subr. *op.cit.* 155, f. 43; Matthew, *Illus. Fl. Tamilnadu Carnatic 2*: t. 688. 1982.

*Distrib.* : In ponds and tanks. Ahmednagar; Akola; Bhandara; Bombay; Chandrapur; Kolhapur; Nagpur; Pune; Raigad; Sindhudurg; Thane; Yavatmal.

#### VALLISNERIA L.

*Vallisneria spiralis* L. Sp. Pl. 1015. 1753; Hook. f. *Fl. Brit. India* 5: 660. 1888; Cooke, *Fl. Pres. Bombay 3*: 171. 1958 (Repr. ed.); Subr. *Aquat. Ang.* 57. 1962. 'Saivala'.

Herbs, tufted, submerged. Leaves linear, ribbon-shaped, sheathing at base, apex obtuse, margins faintly dentate or entire. Flowers dioecious, on long or short scapes; male spathes shortly peduncled, ovate; female spathes connate, tubular. Fruits 5–10 cm long, linear, included in spathes. Seeds numerous, oblong to fusiform, embedded in a gelatinous mass.

*Fls. & Frts.* : October–April.

*Illus.* : Subr. *op.cit.* 151, f. 39; Matthew, *Illus. Fl. Tamilnadu Carnatic 2*: t. 689. 1982.

*Distrib.* : In ponds and tanks. Ahmednagar; Akola; Amaravati; Bhandara; Kolhapur; Nagpur; Pune; Raigad; Satara; Thane; Yavatmal.

#### BURMANNIACEAE

##### BURMANNIA L.

- |  |     |                       |
|--|-----|-----------------------|
| 1. Saprophytic herbs; radical rosette–leaves absent                                | ... | <i>B. candelabrum</i> |
| 1. Autotrophic herbs; radical rosette–leaves present :                             |     |                       |
| 2. Flowers 0.8–1.5 cm long; wings elliptical; perianth–lobe margins double         | ... | <i>B. coelestis</i>   |
| 2. Flowers 0.45–0.7 cm long; wings orbicular–obovate; perianth–lobe margins single | ... | <i>B. pusilla</i>     |

*Burmannia candelabrum* Gagnep. in *Bull. Soc. Bot. Fr.* 54: 462. 1907; A.S. Rao & Verma in *Bull. Bot. Surv. India* 12: 143. (1970) 1972;

Hajra in Nayar, *et al.* Fasc. Fl. India 19: 7. 1988. *B. candida* Griff. ex Hook. f. Fl. Brit. India 5: 665. 1888, *p.p.*

Stems 6–20 cm high, filiform, simple or branched. Scales c 0.2 cm long, appressed, lanceolate, acute. Flowers 0.8–1.0 cm long, solitary or few on curved branches, usually blue, prominently 3-winged. Capsules obovoid or clavate.

*Fls. & Frts.* : August–November.

*Distrib.* : Rare. Konkan (Hajra in Nayar, *et al. op.cit.*).

*B. coelestis* D. Don, Prodr. Fl. Nepal. 44. 1825; Hook. f. Fl. Brit. India 5: 665. 1888; Jonker in Steenis, Fl. Males. 1,4: 17. 1948; A.S. Rao & Verma in Bull. Bot. Surv. India 12: 142. (1970) 1972; Hajra in Nayar, *et al.* Fasc. Fl. India 19: 9. 1988.

Stems 8–30 cm high, simple or branched. Rosulate-leaves 0.3–2.0 x 0.15–0.2 cm, linear-lanceolate, acute or acuminate, 3-nerved; cauline leaves up to 1 cm long, linear-lanceolate, subulate. Flowers blue or purplish with yellow lobes, solitary or few in fascicles. Capsules obovoid, truncate, transversely dehiscent.

*Fls. & Frts.* : June–November.

*Illus.* : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 690. 1982.

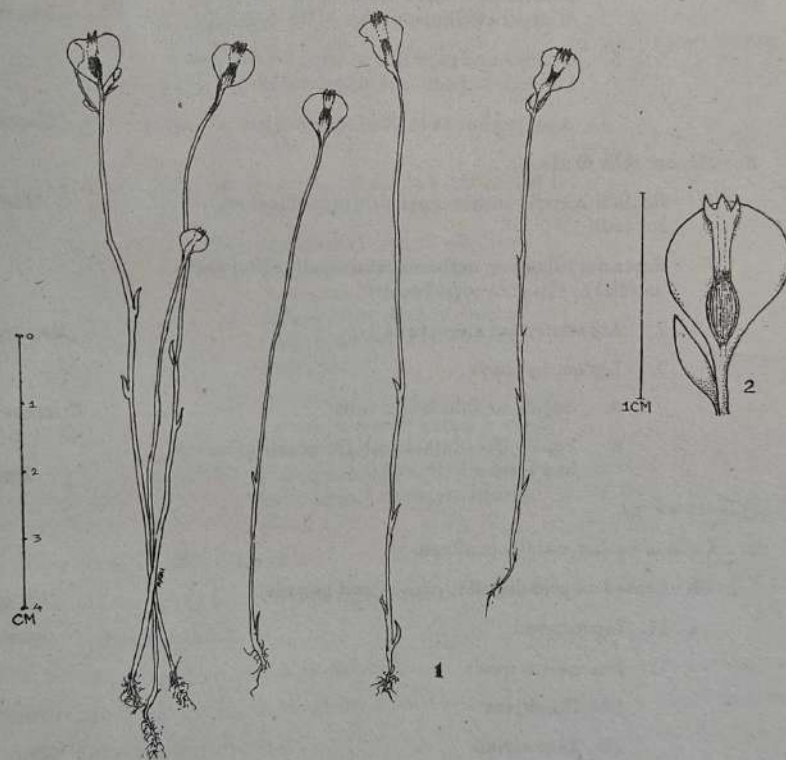
*Distrib.* : Rare. Maharashtra (Hajra in Nayar, *et al. op.cit.*).

*B. pusilla* (Wall. ex Miers) Thw. Enum. Pl. Zeyl. 325. 1864; Hook. f. Fl. Brit. India 5: 665. 1888; A.S. Rao & Verma in Bull. Bot. Surv. India 12: 142. (1970) 1972; Hajra in Nayar, *et al.* Fasc. Fl. India 19: 13. 1988. *Tripteranthus pusilla* Wall. ex Miers in Trans. Linn. Soc. 18: 537. 1841. *Burmannia coelestis* var. *pusilla* (Wall. ex Miers) Trim. Handb. Fl. Ceylon 4: 131. 1898; Cooke, Fl. Pres. Bombay 3: 174. 1958 (Repr. ed.).

Stems 5–20 cm high, slender, simple or branched, green. Rosulate-leaves 0.3–0.5 x 0.15 cm. Scales 0.1–0.2 cm long, lanceolate or elliptic, acute-acuminate. Flowers violet or bluish, solitary. Capsules obovoid, indehiscent.

*Fls. & Frts.* : August–September.

*Distrib.* : In marshy places along streams on higher ghats. Ahmednagar; Kolhapur; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.



*Burmannia coelestis* D. Don  
1. Habit 2. Capsules

## BOTANICAL SURVEY OF INDIA

## ORCHIDACEAE

1. Pollinia granular, powdery or in small masses :
  2. Anther cells adnate to column : ... SATYRIUM
  3. Lip 2-spurred
  3. Lip 1-spurred :
    4. Flowers c 7.5 cm across; stigmatic surfaces flat, almost confluent ... PECTELIS
    4. Flowers less than 3 cm across; stigmatic surfaces not as above, separate :
      5. Ovaries and capsules erect and parallel to peduncle; stigmatic surfaces in form of small swelling on edge of lip ... PERISTYLUS
      5. Ovaries and capsules widely spreading at an angle to peduncle; stigmatic lobes standing out as stalked appendages ... HABENARIA
2. Anther cells distinct :
  6. Roots tuberous; anther opercular, incumbent or suberect ... NERVILEA
  6. Roots not tuberous; anther erect or inclined forward, parallel to elongate rostellum :
    7. Lip ventricose above base ... SPIRANTHES
    7. Lip not as above :
      8. Sepals combined in a tube ... CHEIROSTYLIS
      8. Sepals free, dorsal with the petals cohering in a hood ... ZEUXINE
1. Pollinia waxy :
  9. Cells of anther usually confluent :
    10. Leaves on pseudobulbs, plaited and nerved :
      11. Lip spurred ... EULOPHIA
      11. Lip not spurred :
        12. Epiphytes ... CYMBIDIUM
        12. Terrestrials ... GEODORUM
    10. Leaves not as above :
      13. Lip not spurred :
        14. Sepals spreading widely, broader than petals; stipes of pollinia long, narrow ... COTTONIA
        14. Sepals and petals not spreading widely; stipes of pollinia ovate, flat ... LUISIA

## 13. Lip spurred :

## 15. Spur distant from base of lip :

16. Leaves with a sharply-pointed praemorse apex ... RHYNCHOSTYLIS

16. Leaf-apex bilobed, lobes unequal or subequal, rounded or subacute ... AERIDES

## 15. Spur at base of lip :

17. Spurs 2 ... DIPLOCENTRUM

## 17. Spur 1 :

## 18. Leaf - apex acute or sharply pointed :

19. Interior of spurs with callus and a vertical septum ... CLEISOSTOMA

19. Interior of spurs without callus and vertical septum ... GASTROCHILUS

## 18. Leaf-apex irregularly toothed or bilobed :

20. Leaf-apex irregularly toothed with 2-3 sharp teeth ... VANDA

20. Leaf-apex bilobed, lobes unequal or subequal, rounded or subacute :

21. Midlobe of lip semi-circular forming a brim on large ventricose, saccate spur; pollinia shorter than narrow linearcaudicle, with a small linear gland ... LOXOMA

21. Midlobe of lip not as above; spur narrow, linear or rarely a small conical sac; pollinia equalling oblong caudicle with a small, more or less oblong or square gland ... ACAMPE

## 9. Cells of anther parallel, distinct :

## 22. Pollinia connected by viscous or a granular appendage :

## 23. Inflorescence lateral :

24. Scape from side of pseudobulb ... PHAIUS

24. Raceme terminating leafy stem ... THUNIA

## 23. Inflorescence terminal :

25. Pseudobulbs with two or more leaves ... COELOGYNE

25. Pseudobulbs with single leaf ... PHOLIDOTA

## 22. Pollinia free, rarely with an obscure appendage :

## 26. Terrestrials :

27. Column winged in upper part ... LIPARIS

27. , Column wingless ... MALAXIS

# BOTANICAL SURVEY OF INDIA

10

## 26. Epiphytes :

- |   |     |              |
|---|-----|--------------|
| 28. Plants without pseudobulbs; leaves thick, equitant, distichous  | ... | OBERONIA     |
| 28. Plants with distinct pseudobulbs; leaves not as above :   |     |              |
| 29. Pseudobulbs flattened, discoid, rounded :   |     |              |
| 30. Sepals united to form a tube at least at base   | ... | PORPAX       |
| 30. Sepals completely free  | ... | ERIA         |
| 29. Pseudobulbs elongated, ovoid or conical :   |     |              |
| 31. Inflorescence distinct from pseudobulbs :   |     |              |
| 32. Lateral sepals alongside or under lip; flowers in racemes or spikes; pollinia free                      | ... | BULBOPHYLLUM |
| 32. Lateral sepals spreading; flowers solitary; pollinia subcoherent in pairs in each cell                  | ... | TRIAS        |
| 31. Inflorescence lateral on a leafy or leafless stem, or terminal, or from top of 1-2-leaved pseudobulbs : |     |              |
| 33. Leaves usually solitary; flowers solitary or in pairs   | ... | FLICKINGERIA |
| 33. Leaves more than one; flowers in fascicles or racemes   | ... | DENDROBIUM   |

## ACAMPE Lindl.

- |   |     |                     |
|---|-----|---------------------|
| 1. Lip spurred; panicles leaf-opposed; mid-lobe of lip with a fleshy tooth on each side of base | ... | <i>A. ochracea</i>  |
| 1. Lip saccate; panicles axillary; mid-lobe of lip not as above :                               |     |                     |
| 2. Leaves oblong, entire, unequally deeply cleft at apex  | ... | <i>A. praemorsa</i> |
| 2. Leaves lorate, shortly 3-lobed   | ... | <i>A. rigida</i>    |

*Acampe ochracea* (Lindl.) Hochr. in Bull. New York Bot. Gard. 6:270. 1910; Sant. & Kap. Orch. Bombay 234. 1966; Jayaweera in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 2: 227, f. 100. 1981. *Saccolabium ochraceum* Lindl. in Edw. Bot. Reg. Misc. 2. 1842; Hook. f. Fl. Brit. India 6: 62. 1890.

Epiphytes, erect or pendulous. Leaves 8.5-20.0 x 0.6-2.0 cm, coriaceous, sheathing at base, narrowly oblong, entire, shallowly and unequally 2-lobulate at apex. Inflorescence 8-20 cm long, panicles lax, branching, longer or shorter than leaves. Flowers pedicelled, bracteate, yellow with pale-red, transverse markings. Capsules with stalk, c 3.5 x 0.7 cm, linear-oblong, faintly ribbed.

*Fls.* : December; *Frts.* : May.

*Illus.* : Jayaweera in Dassan. & Fosb. *op.cit.*

*Distrib.* : Rare. Raigad.

**A. praemorsa** (Roxb.) Blatt. & McC. in J. Bombay nat. Hist. Soc. 35: 495. 1932; Sant. & Kap. Orch. Bombay 233, t. 54. 1966. *Epidendrum praemorsum* Roxb. Pl. Cor. 1: 34, t. 43. 1795. *Acampe wightiana* Lindl. Fol. Orchid. 2. 1853; Cooke, Fl. Pres. Bombay 3: 209. 1958 (Repr. ed.). *Saccolabium praemorsum* (Roxb.) Hook. f. Fl. Brit. India 6: 62. 1890. *S. wightianum* (Lindl.) Hook. f. *op.cit.*

Stem, c 1.5 cm thick, sheathed. Leaves thick, coriaceous, channelled, 8-30 x 1.5-3.0 cm. Flowers yellow in compact, corymbose racemes. Capsules 6-7 x 0.6-0.8 cm, subcylindric, longitudinally ribbed.

*Fls. & Frts.* : February-August.

*Illus.* : Wight, Ic. t. 1670. 1851 (*Vanda wightiana* Lindl.); Sant. & Kap. *op.cit.*; Matthew, Ilus. Fl. Tamilnadu Carnatic 2: t. 718. 1982.

*Distrib.* : Bombay; Pune; Raigad; Ratnagiri; Sindhudurg; Thane.

**A. rigida** (Buch.-Ham. ex J. E. Sm.) P.F. Hunt in Kew Bull. 24: 98. 1970; Jayaweera in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 2: 229, f. 101. 1981; N.P. Singh & Dawre in J. Econ. Tax. Bot. 4: 1021. 1983. *Aerides rigida* Buch.-Ham. ex J.E. Sm. in Rees, Cyclop. 39. *Aerides* n. 12. 1819; Hook. f. Fl. Brit. India 6: 48. 1890. *Saccolabium longifolium* (Lindl.) Hook. f. *op.cit.* 62, p.p.

Stems stout, 60-90 cm long. Leaves 15-30 x 3.7 cm, thickly coriaceous. Flowers yellow, tinged with red, in many flowered stoutly peduncled panicles; peduncles with racemes, 15-30 cm long, distantly branched. Capsules longitudinally ribbed.

*Fls. & Frts.* : April-September.

*Illus.* : Jayaweera in Dassan. & Fosb. *op.cit.*

*Distrib.* : Rare. Ratnagiri; Sindhudurg.

#### AERIDES Lour.

- |   |     |                       |
|---|-----|-----------------------|
| 1. Spur at base of lip  | ... | <i>A. dalzelliana</i> |
| 1. Spur distant from base of lip :                                  |     |                       |
| 2. Midlobe of lip small, incurved between the much larger sidelobes | ... | <i>A. odoratum</i>    |

2. Midlobe of lip large, sidelobes small :
3. Lip deflexed ... *A. ringens*
3. Lip horizontal or inflexed :
4. Spur long ... *A. maculosum*
4. Spur short:
5. Midlobe of lip hastately ovate, tip rounded ... *A. multiflorum*
5. Midlobe of lip broadly ovate-oblong, obscurely 3-lobed, crenate or toothed ... *A. crispum*

***Aerides crispum*** Lindl. Gen. Sp. Orchid. 239. 1833; Hook. f. Fl. Brit. India 6: 45. 1890; Cooke, Fl. Pres. Bombay 3: 203. 1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 122. 1966. 'Pan-Shing', 'Ruk-Shing'.

Stems 10–25 cm long, thick, sheathed. Leaves 4–24 x 0.5–3.0 cm, thickly coriaceous, oblong, with 2 unequal rounded lobes at apex. Inflorescence 10–30 cm long, erect or drooping. Flowers c 3 cm across, pinkish-white, bracteate, pedicellate. Capsules 2.0–3.5 x 0.6 cm, oblong-ellipsoid, strongly ridged.

*Fls. & Frts.* : May–October.

*Illus.* : Wight, Ic. t. 1677. 1851 (*A. lindleyana*); Fyson, Fl. Nilgiri Pulney Hill tops 2: t. 248. 1915 (Repr. ed. 1974).

*Distrib.* : Ahmednagar; Kolhapur; Nasik; Pune; Raigad; Satara; Sindhudurg; Thane.

***A. dalzelliana*** (Sant.) Garay in Bot. Mus. Leaf. Harv. Univ. 23(4): 158. 1972. *Sarcochilus dalzelliana* Sant. in Kew Bull. 1949: 498. 1949. *Saccolabium viridiflorum* (Dalz.) Lindl. in J. Linn. Soc. 3: 36. 1858; Hook. f. Fl. Brit. India 6: 63. 1890. *Sarcochilus viridiflorus* T. Cooke, Fl. Pres. Bombay 2: 697. 1907 [3: 201. 1958 (Repr. ed.)] *non* Hook. f. 1890. *Smithsonia viridiflora* (Dalz.) Sald. in J. Bombay nat. Hist. Soc. 71: 75. 1974.

Stems short, sheathed. Leaves usually 2 with a small one in between, 2–9 x 1–2 cm, elliptic-lanceolate, tapering at base, entire, unequally bilobed at apex, lobes entire. Racemes corymbose, umbellate at apex of peduncle. Flowers greenish-white, pedicellate, bracteate. Capsules 3–5 cm long, narrowly fusiform, ribbed, purplish-brown.

*Fls. & Frts.* : May–March.

*Illus.* : Sant. & Kap. *op.cit.*

*Distrib.* : Dhule; Kolhapur; Pune; Satara; Sindhudurg; Thane.

**A. maculosum** Lindl. in Edw. Bot. Reg. t. 58. 1845; Hook. f. Fl. Brit. India 6: 45. 1890; Cooke, Fl. Pres. Bombay 3: 203. 1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 120, t. 30. 1966.

Stems 1.0–1.5 cm thick, sheathed. Leaves channelled, coriaceous, 3–23 x 0.8–3.0 cm, linear-oblong, broadest at middle, with 2 unequal, rounded lobes at apex. Inflorescence up to 24 cm long, simple or branched. Flowers c 2.5 cm in diam., pink, pedicelled, bracteate. Capsules 2–5 x 0.6–1.0 cm, obovoid, strongly ribbed, shortly stalked.

*Fls. & Frts.* : May–October.

*Illus.* : Wight, Ic. tt. 1675–76. 1851 (*Saccolabium speciosum*); Sant. & Kap. *op.cit.*; Sald. in Sald. & Nicols. Fl. Hassan Dt. 813, f. 122. 1976.

*Distrib.* : Ahmednagar; Amaravati; Kolhapur; Nasik; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

**A. multiflorum** Roxb. Pl. Cor. 3: 68, t. 271. 1820; Hook. f. Fl. Brit. India 6: 44. 1890; Mukerjee in Bull. Bot. Surv. India 14: 94. 1972.

Stems 10–25 cm long, stout. Leaves imbricate, narrowly oblong, 15–25 cm long, deeply channelled, keeled, apex 2-lobed. Flowers 2–3 cm in diam., pink or rose-purple, in axillary racemes longer than leaves, decurved. Capsules 1.75–2.0 cm long, subclavate, stoutly pedicelled.

*Fls. & Frts.* : April–June.

*Illus.* : Bose & Bhatt. Orchid. India 58. 1980.

*Distrib.* : Pune; Satara.

**A. odoratum** Lour. Fl. Cochinch. 525. 1790; Hook. f. Fl. Brit. India 6: 47. 1890; Cooke, Fl. Pres. Bombay 3: 204. 1958 (Repr.ed.); Holtt. Rev. Fl. Malaya 1: 698, f. 215. 1957.

Stems 10–30 cm long, stout. Leaves 15–30 x 2.5–4.5 cm, flat, keeled, oblong, blunt, obtusely 2-lobed at apex. Flowers fragrant, white with pink spots, in supra-axillary, deflexed, many-flowered racemes, as long as or longer than leaves; spur hollow, decurved. Capsules 2.5–3.7 cm long, oblong-clavate, angles obtuse.

*Fls. & Frts.* : May–July.

*Illus.* : Holtt. *op.cit.*; Bose & Bhatt. Orchid. India 59. 1980.

*Distrib.* : Konkan (Hook. f. *op.cit.*); Pune.

**A. ringens** (Lindl.) C.E.C. Fischer in Kew Bull. Misc. Inf. Kew 1928: 284. 1928; Sant. & Kap. Orch. Bombay 119, t. 29. 1966.

*Saccolabium ringens* Lindl. Gen. Sp. Orchid. 221. 1833. *Aerides radicosum* A. Rich. in Ann. Sci. Nat. 2, 15: 65, t.i.c. 1841; Hook. f. Fl. Brit. India 6: 46. 1890; Cooke, Fl. Pres. Bombay 3: 204. 1958 (Repr. ed.).  
*A. linearis* Hook. f. *op.cit.* 47.

Stems 1.0–1.5 cm thick, sheathed. Leaves 5–21 x 0.3–0.7 cm, coriaceous, channelled, linear or linear-oblong, bilobed at apex. Racemes 6–26 cm long, erect, rigid, often branched. Flowers pink or mauve, pedicellate, bracteate, c 1.5 cm long. Capsules c 1.5 x 0.6 cm, obovoid-oblong, strongly ribbed.

Fls. & Frts. : March–July.

Illus. : Wight, Ic. t. 1678. 1851 (*Saccolabium paniculatum*); Sant. & Kap. *op.cit.*; Jayaweera in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 2: 206, f. 91. 1981; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 713. 1982.

Distrib. : Rare. Bombay; Satara.

BULBOPHYLLUM Du Petit–Thou. (*nom. cons.*)

- |   |                             |
|---|-----------------------------|
| 1. Pseudobulbs with 2 or more thin, membranous leaves; leaves deciduous during flowering; flowers umbellate | ... <i>B. fimbriatum</i>    |
| 1. Pseudobulbs with a single thick coriaceous leaf on top; leaves persistent; flowers in racemes            | ... <i>B. neilgherrense</i> |

**Bulbophyllum fimbriatum** (Lindl. ) Reichb. f. in Walp. Ann. 6: 260. 1861; Sald. in Sald. & Nicols. Fl. Hassan Dt. 814. 1976. *Cirrhopetalum fimbriatum* Lindl. in Edw. Bot. Reg. Misc. 24: 72. 1839; Hook. f. Fl. Brit. India 5: 774. 1890; Cooke, Fl. Pres. Bombay 3: 188. 1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 198, t. 48. 1966.

Rhizomes 0.2–0.4 cm thick, brown, woody, bearing pseudobulbs, up to 2 cm apart. Pseudobulbs 1.0–2.5 x 0.8–2.0 cm, yellow, conical-ovoid, irregularly and longitudinally grooved. Leaves 4–12 x 1.1–2.0 cm, oblong-lanceolate or elliptic, acute, margins whitish, minutely papillate. Scape 8–20 x 0.1–0.2 cm. Flowers greenish or creamy-purple, c 2 cm long, bracteate, pedicellate. Capsules 1.0–1.2 x 0.6 cm, ob-pyriform, green.

Fls. & Frts. : June–April.

Illus. : Wight, Ic. t. 1665. 1851; Sant. & Kap. *op.cit.* (*Cirrhopetalum fimbriatum*).

Distrib. : Pune; Satara; Sindhudurg.

**B. neilgherrense** Wight, Ic. t. 1650. 1851; Hook. f. Fl. Brit. India 5: 761. 1890; Cooke, Fl. Pres. Bombay 3: 189. 1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 195, t. 47. 1966.

Epiphytes or lithophytes. Rhizomes 0.2–0.3 cm thick, creeping, producing at intervals a pseudobulb and a cluster of roots. Pseudobulbs 2–8 x 2–3 cm, ovoid or conical-ovoid, yellowish-green, irregularly 3–5-angled. Leaves 4–15 x 1.5–3.5 cm, oblong or elliptic, obtuse, emarginate or entire. Inflorescence up to 12 cm long, arising from base of a pseudobulb, somewhat drooping, dense. Flowers c 1.5 cm long, dull yellow, pedicellate, bracteate.

*Fls.* : July–December.

*Illus.* : Wight, *op. cit.*; Sant. & Kap. *op. cit.*; Joseph in Rec. Bot. Surv. India 22: 93, f. 74a–74b. 1982.

*Distrib.* : Bombay; Pune; Sindhudurg.

#### CHEIROSTYLIS Bl.

- |   |     |                      |
|---|-----|----------------------|
| 1. Racemes puberulous, 8–10-flowered; petals oblong-obovate             | ... | <i>C. parvifolia</i> |
| 1. Racemes glandular-pubescent, 2–3-flowered; petals lanceolate-falcate | ... | <i>C. flabellata</i> |

**Cheirostylis flabellata** Wight, Ic. t. 1727. 1852; Hook. f. Fl. Brit. India 6: 105. 1890; Cooke, Fl. Pres. Bombay 3: 214. 1958 (Repr. ed.); Jayaweera in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 2: 300, f. 133. 1981.

Herbs, 10–20 cm high, internodes swollen. Leaves thin, petiolate, 2–4, 0.9–2.0 x 0.7–1.2 cm, ovate, apex acute, base rounded or subcordate, 3-nerved. Flowers white c 1.0 x 0.6 cm, in long-peduncled, terminal, 2 or 3-flowered racemes. Capsules 0.5–3.5 cm long, globular or pyriform.

*Fls. & Frts.* : November.

*Illus.* : Wight, *op. cit.*; Jayaweera in Dassan. & Fosb. *op. cit.*; Joseph, Orch. Nilgiris 64, t. 31. 1987.

*Distrib.* : Ratnagiri; Satara.

**C. parvifolia** Lindl. in Bot. Reg. Misc. 20. 1839; Hook. f. Fl. Brit. India 6: 105. 1890; Jayaweera in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 2: 298, f. 132. 1981.

Terrestrial herbs, up to 15 cm tall; stems erect or prostrate; internodes short, green, upper ones enclosed in hyaline sheaths. Leaves petiolate, ovate or ovate-lanceolate, membranous, acuminate at apex. Flowers pinkish-white, in 8–10-flowered racemes; lip longer than sepals, column with 2 parallel appendages in front.

*Fls. & Frts.* : November – February.

*Illus.* : Jayweera in Dassan. & Fosb. *op. cit.*

*Distrib.* : Rare. Sindhudurg (S. M. Almeida, Fl. Savantwadi 2: 5–6.1990).

#### CLEISOSTOMA Bl.

*Cleisostoma tenuifolium* (L.) Garay in Bot. Mus. Leaf. Harv. Univ. 23(4): 175. 1972. *Epidendrum tenuifolium* L. Sp. Pl. 952. 1753. *Sarcanthus peninsularis* Dalz. in Hook. Kew J. Bot. 3: 343. 1851; Hook. f. Fl. Brit. India 6: 67.1890; Cooke, Fl. Pres. Bombay 3: 210. 1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 230, t. 53. 1966.

Epiphytes, pendulous; stems 20–24 cm long. Leaves 6–12 x 0.6–1.0 cm, linear-oblong, fleshy, notched and acuminate at tip. Flowers reddish-yellow, in downwards pointing, leaf opposed racemes; sepals spreading, fleshy, yellow with red margins, broadly oblong; petals fleshy, oblong, lip white, 3-lobed, midlobe triangular, larger than lateral ones, spur arched. Capsules 1.7–1.9 x 0.6–0.8 cm, narrowly oblong, almost sessile, strongly ribbed.

*Fls.* : June–July. *Frts.* : November.

*Illus.* : Wight, Ic. t. 1747. (May)1851 (*Sarcanthus pauciflorus*); Sant. & Kap. *op. cit.*

*Distrib.* : Rare in evergreen forests. Sindhudurg.

#### COELOGYNE Lindl. ("Caelogyne")

*Coelogyne nitida* (Wall. ex D. Don) Lindl. Gen. Sp. Orchid. 40. 1830; S. Das & Jain in Fasc. Fl. India 5: 19, t. 1 (2), figs. 5a & b. 1980. *Cymbidium nitidum* Wall. ex D. Don, Prodr. Fl. Nepal. 35. 1825. *Coelogyne ochracea* Lindl. in Edw. Bot. Reg. 32: t. 69. 1846; Hook. f. Fl. Brit. India 5: 831. 1890.

Pseudobulbs 2.4–6.0 x 0.8–3.5 cm, oblong, subquadrangular. Leaves petioled, 7.0–21.5 x 1.5–3.5 cm. Inflorescence 11–24 cm long, 4–8-flowered. Flowers 2.5–5.3 cm across, white.

*Fls. & Frts.* : March–June.

*Illus.* : King & Pantl. in Ann. Roy. Bot. Gard. Calcutta 8: 132, t. 182. 1898 (*Coelogyne ochracea*).

*Distrib.* : Rare. Pune.

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Fl. Ceylon

*Distr.*

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Tamilnadu Car

*Distrib.* : B

## COTTONIA Wight

**Cottonia peduncularis** (Lindl.) Reichb. f. in Cat. Orchid. Schiller 52. 1857; Sant. & Kap. Orch. Bombay 222. 1966. *Vanda peduncularis* Lindl. Gen. Sp. Orchid. 216. 1833. *Cottonia macrostachya* Wight, Ic. t. 1755. 1851; Hook. f. Fl. Brit. India 6: 26. 1890; Cooke, Fl. Pres. Bombay 3: 206. 1958 (Repr. ed.).

Stems 0.7–1.0 cm thick, closely sheathed. Leaves 5–17 x 1–2 cm, lorate, spreading, sessile, narrowly elliptic-oblong, entire, coriaceous, keeled on underside and abruptly ending in 2 unequal rounded lobes with a broad acute sinus in between. Flowers brownish-yellow, few, in a raceme at apex of branches of peduncle, bracteate, pedicellate. Capsules 5–6 x 0.5–0.7 cm, oblong-fusiform, strongly ribbed.

*Fls. & Frts.* : January–May.

*Illus.* : Wight, *op.cit.*; Jayaweera in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 2: 262, f. 116. 1981.

*Distrib.* : Pune; Sindhudurg; Thane.

## CYMBIDIUM Swartz

**Cymbidium aloifolium** (L) Swartz in Nov. Act. Reg. Soc. Sci. Upsal. 2, 6: 73. 1799; Hook. f. Fl. Brit. India 6: 10. 1890; Cooke, Fl. Pres. Bombay 3: 199. 1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 206. 1966; Seth in Kew Bull. 37: 399. 1982. *Epidendrum aloifolium* L. Sp. Pl. 953. 1753. *Cymbidium intermedium* Jones in Reinwardtia 9:71.1974.

Epiphytes. Pseudobulbs 4–6 cm long, ovoid, sheathed by leaf bases. Leaves 20–55 x 1–3 cm, coriaceous, oblong, entire, with a prominent midnerve, tapering at base into a 4–10 cm long petiole, apex notched, with 2 unequal rounded lobes. Inflorescence 25–45 cm long, racemes pendulous, sheathed at base. Flowers yellowish-red, bracteate, pedicelled. Capsules c 6.5 x 2.5 cm, ovoid or ellipsoid, longitudinally and shallowly grooved.

*Fls. & Frts.* : May–June.

*Illus.* : Wight, Ic. t. 1753. 1852 (*C. erectum*); Jayaweera in Dassan. Fosb. Rev. Handb. Fl. Ceylon 2: 184, f. 82. 1981; Matthew, Illus. Fl. Tamilnadu Carnatic 2: tt. 721 & 977b. 1982.

*Distrib.* : Bombay; Pune; Raigad; Satara; Sindhudurg.

## DENDROBIUM O. Swartz (nom.cons.)

- |   |     |                         |
|---|-----|-------------------------|
| 1. Mentum absent  | ... | <i>D. lawianum</i>      |
| 1. Mentum present :   |     |                         |
| 2. Inflorescence terminal or both terminal and lateral :  |     |                         |
| 3. Flowers large, 7.5-12.5 cm in diam.  | ... | <i>D. formosum</i>      |
| 3. Flowers small or medium sized :  |     |                         |
| 4. Stem copiously branched  | ... | <i>D. herbaceum</i>     |
| 4. Stem simple or nearly so :   |     |                         |
| 5. Petals much broader than dorsal sepals :   |     |                         |
| 6. Flowers yellow or buff coloured; bracts ovate  | ... | <i>D. ovatum</i>        |
| 6. Flowers white or with a pinkish tinge; bracts lanceolate   | ... | <i>D. barbatulum</i>    |
| 5. Petals not broader than dorsal sepals :  |     |                         |
| 7. Leaves fleshy; peduncles short, somewhat thick; mid-lobe of lip acute  | ... | <i>D. peguanum</i>      |
| 7. Leaves thin, membranous; peduncles 4-5 cm long, filiform, slender; mid-lobe of lip rounded, obtuse or retuse : |     |                         |
| 8. Peduncles straight; bracts equalling pedicels; lip pink with deep purple veins                                 | ... | <i>D. microbulbon</i>   |
| 8. Peduncles zigzag; bracts shorter than pedicels; lip creamish with pink veins                                   | ... | <i>D. nanum</i>         |
| 2. Inflorescence lateral on stem or pseudobulb :  |     |                         |
| 9. Flowers white or more or less purple :   |     |                         |
| 10. Petals as narrow as the sepals or narrower; lip narrower than broad   | ... | <i>D. macrostachyum</i> |
| 10. Petals much broader than the sepals; lip as broad as long or broader :  |     |                         |
| 11. Petals oblong   | ... | <i>D. aphyllum</i>      |
| 11. Petals obovate :  |     |                         |
| 12. Lip sessile, distinctly 3-lobed   | ... | <i>D. aqueum</i>        |
| 12. Lip shortly clawed, obscurely 3-lobed   | ... | <i>D. crepidatum</i>    |
| 9. Flowers golden yellow or pale pink :   |     |                         |
| 13. Stems terete :  |     |                         |
| 14. Base of lip truncate  | ... | <i>D. fimbriatum</i>    |

14. Base of lip  
13. Stems clavate  
15. Mentum  
15. Mentum

*Dendrobium*  
Pres. Madras  
*aphyllum* Roemer  
Hook. Exot. Fl.  
Pres. Bombay  
70. 1957.

Stems slender  
lanceolate, terete  
upwards, deciduous

Fls. & Frs.

Illus. : Hook.

Distrib. : India

*D. aqueum*  
Brit. India 5: 7  
ed.); Gammie in  
Orch. Bombay 9

Pendulous  
gradually thickening  
distichous, 7-  
ovate-lanceolate  
of 2-3 flowers from  
pedicellate, bracts  
strong ridges, green

Fls. & Frs.

Illus. : Wight

Distrib. : Andhra

Note : Cooke

*D. barbatulum*  
India 5: 719. 1890  
Sant. & Kap. Orch.

14. Base of lip cuneate ... *D. hookerianum*  
 13. Stems clavate :  
 15. Mentum subglobose ... *D. densiflorum*  
 15. Mentum rounded ... *D. farmeri*

**Dendrobium aphyllum** (Roxb.) C. E. C. Fischer in Gamble, Fl. Pres. Madras 1416. 1928 [3: 991. 1957 (Repr. ed.)]. *Limodorum aphyllum* Roxb. Pl. Cor. t. 41. 1795. *Dendrobium pierardi* Roxb. in Hook. Exot. Fl. t. 9. 1822; Hook. f. Fl. Brit. India 5: 738. 1890; Cooke, Fl. Pres. Bombay 3: 187. 1958 (Repr. ed.); Holtt. Rev. Fl. Malaya 1: 292, f. 70. 1957.

Stems slender, pendulous, 60–90 cm long. Leaves sessile, ovate-lanceolate, the lowermost 10.0–12.5 cm long, gradually smaller upwards, deciduous. Flowers 2.5–5.0 cm across, usually in pairs.

*Fls. & Frts.* : April–June.

*Illus.* : Holtt. *op.cit.*

*Distrib.* : Pune; Satara.

**D. aqueum** Lindl. in Edw. Bot. Reg. Misc. 6, t. 54. 1843; Hook. f. Fl. Brit. India 5: 739. 1890; Cooke, Fl. Pres. Bombay 3: 187. 1958 (Repr. ed.); Gammie in J. Bombay nat. Hist. Soc. 35: 264. 1931; Sant. & Kap. Orch. Bombay 99, t. 24. 1966.

Pendulous herbs; pseudobulbs 15–45 cm long, thin at base, gradually thickening upwards; internodes sheathed. Leaves alternate, distichous, 7–14 x 2–5 cm, sessile, oblong or oblong-elliptic or ovate-lanceolate, acute, entire, 8–10-nerved. Inflorescence of fascicles of 2–3 flowers from upper portion of each node. Flowers c 3.5 x 3.0 cm, pedicellate, bracteate. Capsules c 4.0 x 1.8 cm, obovoid-pyriform, with 6 strong ridges, greyish-green.

*Fls. & Frts.* : September–May.

*Illus.* : Wight, Ic. t. 1645. 1851 (*D. album*); Sant. & Kap. *op.cit.*

*Distrib.* : Ahmednagar; Kolhapur; Nasik; Pune; Satara; Thane.

*Note* : Cooke (*op.cit.*) included this under cultivated species.

**D. barbatulum** Lindl. Gen. Sp. Orchid. 84. 1830; Hook. f. Fl. Brit. India 5: 719. 1890; Cooke, Fl. Pres. Bombay 3: 184. 1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 93, t. 22. 1966.

Pseudobulbs 1.5–3.2 cm long, leafless during flowering, one-to several-noded. Leaves 4.5–13.0 x 1.5–3.5 cm, alternate, distichous, sheathing at base, lanceolate to ovate-lanceolate, acute, entire. Racemes 1–27-flowered, up to 25 cm long, erect. Flowers 2.5–4.0 x 2.5–4.5 cm. Capsules c 2.2 x 1.2 cm, ellipsoid, greenish-purple with 3 broad and 3 narrow bands, beaked.

*Fls. & Frts.* : January–July.

*Illus.* : Sant. & Kap. *op. cit.*

*Distrib.* : Kolhapur; Nasik; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

**D. crepidatum** Lindl. in Paxt. Fl. Gard. 1: 63, f. 45. 1850; Hook. f. Fl. Brit. India 5: 740. 1890; Cooke, Fl. Pres. Bombay 3: 185. 1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 101. 1966. 'Bechu', 'Nangli'.

Pendulous epiphytes. Pseudobulbs greenish-yellow, 8–20 x 0.6–2.0 cm, narrow at base, thickening upwards. Leaves 4–11 x 0.5–1.5 cm, membranous, sheathing, oblong-lanceolate, acute, entire, many-nerved. Flowers c 3.5 cm across, in pairs from nodes of apical parts of pseudobulbs, pedicellate, yellowish-white. Capsules c 1.5 cm long, fusiform.

*Fls. & Frts.* : September–May.

*Illus.* : Bose & Bhatt. Orchid. India 205. 1980.

*Distrib.* : Kolhapur; Pune; Raigad; Satara; Sindhudurg.

**D. densiflorum** Wall. ex Lindl. in Wall. Pl. As. Rar. 1: 34, t. 40. 1830; Hook. f. Fl. Brit. India 5: 748. 1890.

Stems 30–45 cm high, narrowly clavate. Leaves subterminal, 10–15 cm long, acute. Flowers c 5 cm across, white or yellow, crowded in decurved racemes. Capsules c 7.5 cm long.

*Illus.* : Bose & Bhatt. Orchid. India 208. 1980.

*Distrib.* : Pune.

**D. farmeri** Paxt. in Bot. Mag. 15: 241. 1849; Hook. f. Fl. Brit. India 5: 750. 1890; Cooke, Fl. Pres. Bombay 3: 188. 1958 (Repr. ed.); Holtt. Rev. Fl. Malaya 1: 282, f. 65. 1957.

Stems 25–45 cm long, clavate, 4-angled. Leaves 2–4, 10–20 cm long, near apex of stems, elliptic-oblong, persistent. Flowers c 5 cm across; lip suborbicular; disk deep yellow.

*Illus.* : Holt

*Distrib.* : Ra

**D. fimbriat**  
India 5: 745. 1890

Stems c 1 m  
acuminate. Flowe  
leafy stems.

*Illus.* : Bose &

*Distrib.* : Ra

**D. formosun**  
1830; Hook. f. Fl.  
186. 1958 (Repr. ed

Stems 30–45  
c 12.5 cm long, ov  
Flowers white, in t

*Fls. & Frts.* : M

*Illus.* : Bose &

*Distrib.* : Rare

**D. herbaceu**  
Brit. India 5: 719.  
ed.); Sant & Kap. O

Epiphytic her  
upwards. Leaves  
caducous, alternate  
subobtus, entire. In  
terminal. Flowers c  
Capsules c 1.8 x 0  
tapering towards ba

*Fls. & Frts.* : Se

*Illus.* : Wight,  
*op. cit.*

*Distrib.* : Ahme

**D. hookerian**  
Brit. India 5: 745. 18

*Illus.* : Holtt. *op. cit.*; Bose & Bhatt. Orchid. India 211. 1980.

*Distrib.* : Rare. Pune.

**D. fimbriatum** Hook. Exot. Fl. 1: t. 71. 1823; Hook. f. Fl. Brit. India 5: 745. 1890; Mukerjee in Bull. Bot. Surv. India 14: 96. 1972.

Stems c 1 m high, base swollen. Leaves 15–20 cm long, lanceolate, acuminate. Flowers 5.0–7.5 cm across, in pendulous racemes usually on leafy stems.

*Illus.* : Bose & Bhatt. Orchid. India 212. 1980.

*Distrib.* : Rare. Pune.

**D. formosum** Roxb. ex Lindl. in Wall. Pl. As. Rar. 1: 34, t. 39. 1830; Hook. f. Fl. Brit. India 5: 721. 1890; Cooke, Fl. Pres. Bombay 3: 186. 1958 (Repr. ed.); Mukerjee in Bull. Bot. Surv. India 14: 96. 1972.

Stems 30–45 cm long, cylindric, stout, sheaths pubescent. Leaves c 12.5 cm long, ovate-oblong, amplexicaul, unequally 2-lobed at apex. Flowers white, in terminal racemes; lip broadly obovate, entire.

*Fls. & Frts.* : May–June.

*Illus.* : Bose & Bhatt. Orchid. India 213. 1980.

*Distrib.* : Rare. Pune.

**D. herbaceum** Lindl. in Edw. Bot. Reg. 26: 69. 1840; Hook. f. Fl. Brit. India 5: 719. 1890; Cooke, Fl. Pres. Bombay 3: 184. 1958 (Repr. ed.); Sant & Kap. Orch. Bombay 82, t. 17. 1966.

Epiphytic herbs. Pseudobulbs 30–90 x 0.7–1.5 cm, thickening upwards. Leaves 3–11 x 0.4–1.3 cm, sessile, sheathing at base, caducous, alternate, distichous, linear-oblong or lanceolate, acute or subobtuse, entire. Inflorescence appearing after leaf-fall, 2–5-flowered terminal. Flowers c 0.7 x 1.0 cm, greenish-white, pedicellate, bracteate. Capsules c 1.8 x 0.4 cm, narrowly fusiform, broad at apex, sharply tapering towards base.

*Fls. & Frts.* : September–April.

*Illus.* : Wight, Ic. t. 1648. 1851 (*D. ramosissimum*); Sant. & Kap. *op. cit.*

*Distrib.* : Ahmednagar; Nasik; Pune; Satara; Sindhudurg; Thane.

**D. hookerianum** Lindl. in J. Linn. Soc. 3: 8. 1859; Hook. f. Fl. Brit. India 5: 745. 1890.

Pseudobulbs up to 20 cm long, terete, base swollen. Leaves 5–15 cm long, oblong-lanceolate, acuminate. Flowers 5–10 cm across, golden yellow with purple blotches, in pendulous racemes. Capsules c 7.5 cm, fusiform.

*Illus.* : Bose & Bhatt. Orchid. India 218.1980.

*Distrib.* : Rare. Pune.

**D. lawianum** Lindl. in J. Linn. Soc. 3: 10. 1859 ('*lawanum*'); Sant. & Kap. Orch. Bombay 102, t. 25.1966. *D. crepidatum sensu* Hook. f. Fl. Brit. India 5: 740. 1890, *p.p. non* Lindl. 1850.

Pendulous epiphytes. Pseudobulbs 5–25 cm long, leafless at time of flowering. Leaves 4.5–10.5 x 0.5–1.7 cm, distichous, sessile, sheathing at base, lanceolate or oblong-lanceolate, acute, entire, usually with 5 prominent nerves and several faint ones. Flowers subregular, shallowly cupshaped, from nodes in pairs or solitary, white. Capsules c 2 x 1 cm, ovoid, pale-green, ribbed, surmounted by the hardened pale brown column.

*Fls. & Frts.* : March–May.

*Illus.* : Sant. & Kap. *op.cit.*

*Distrib.* : Satara; Sindhudurg.

**D. macrostachyum** Lindl. Gen. Sp. Orchid. 78. 1830; Hook. f. Fl. Brit. India 5: 735. 1890; Cooke, Fl. Pres. Bombay 3: 185. 1958 (Repr.ed.); Sant. & Kap. Orch. Bombay 96, t. 23. 1966; Jayaweera in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 2: 90, t.41.1981.

Pendulous epiphytes. Pseudobulbs leafless during flowering, 7–50 cm long. Leaves alternate, distichous, somewhat coriaceous, completely and closely sheathing the node below, 2–9 x 0.3–2.5 cm, narrowly oblong or ovate-lanceolate, acute, entire. Inflorescence solitary or in cymes. Flowers c 2.5 x 2.0 cm, pedicellate. Capsules 3.5–4.0 x 0.6 cm, narrowly spindle-shaped, beaked.

*Fls. & Frts.* : May–December.

*Illus.* : Wight, Ic. t. 1647. 1851; Sant. & Kap. *op.cit.*; Jayaweera in Dassan. & Fosb. *op.cit.*

*Distrib.* : Pune; Satara; Sindhudurg.

**D. microbulbon** A. Rich. in Ann. Sci. Nat. 2, 15:19, t. 8. 1841; Hook. f. Fl. Brit. India 5: 716. 1890; Cooke, Fl. Pres. Bombay 3: 183. 1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 87, t. 19.1966.

Pseudobulb  
flowering, co  
sessile, sheat  
nerved. Inflor  
pseudobulb. I  
or obovoid.

*Fls. & Frts.*

*Illus.* : W

*Distrib.*  
Sindhudurg;

**D. nanu**  
India 5: 717.  
567. 1905 &  
ed.); Sant. & K

Epiphyte  
conical, 1–4–  
sessile, shea  
lanceolate, ob  
Flowers c 1.5  
cm, stalked, ov

*Fls. & Frts.*

*Illus.* : Sa  
f. 83a–83c. 198

*Distrib.* :

**D. ovatu**  
& Kap. Orch. 1  
4: 101. 1805. 1  
Hook. f. Fl. Br  
1958 (Repr. ed.

Pseudobulb  
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1.2–3.0 cm, e  
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oblong-ovoid, p

*Fls. & Frts.*

Pseudobulbs 1-2 x 1 cm, crowded, mauve-brown, leafless during flowering, conical, 1-3-jointed. Leaves caducous, 2-14 x 0.3-1.3 cm, sessile, sheathing at base, linear to oblong-lanceolate, acute, entire, 1-nerved. Inflorescence in racemes, 1.5-10.0 cm long, erect, 1-3 at apex of pseudobulb. Flowers 1.0-1.2 x 0.7-0.8 cm. Capsules c 1.0 x 0.6 cm, ovoid or obovoid.

*Fls. & Frts.* : December-May.

*Illus.* : Wight, Ic. t. 1643. 1853 (*D. humile*); Sant. & Kap. *op.cit.*

*Distrib.* : Kolhapur; Nasik; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

**D. nanum** Hook. f. in Hook. Ic. Pl. 19: t. 1853. 1889 & Fl. Brit. India 5: 717. 1890. *D. mabelae* Gammie in J. Bombay nat. Hist. Soc. 16: 567. 1905 & 35: 262. 1931; Cooke, Fl. Pres. Bombay 3: 183. 1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 89, t. 20. 1966.

Epiphytes. Pseudobulbs 1-4 x 0.7-2.0 cm, yellowish-green, ovoid-conical, 1-4-noded. Leaves 2-4, alternate, distichous, subcoriaceous, sessile, sheathing at base, 3-8 x 0.4-0.8 cm, oblong or oblong-lanceolate, obtuse, entire. Inflorescence 1-3 per plant, 5-12 cm long. Flowers c 1.5 x 1.0 cm, brown or brownish-green. Capsules c 2.5 x 0.7 cm, stalked, ovoid, ribbed.

*Fls. & Frts.* : July-April.

*Illus.* : Sant. & Kap. *op.cit.*; Joseph in Rec. Bot. Surv. India 22: 100, f. 83a-83c. 1982; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 710. 1982.

*Distrib.* : Nasik; Satara.

**D. ovatum** (Willd.) Kranzl. In Engl. Pflanzenr. 45: 71. 1910; Sant. & Kap. Orch. Bombay 91, t. 21. 1966. *Cymbidium ovatum* Willd. Sp. Pl. 4: 101. 1805. *Dendrobium chlorops* Lindl. in Edw. Bot. Reg. 44. 1844; Hook. f. Fl. Brit. India 5: 719. 1890; Cooke, Fl. Pres. Bombay 3: 184. 1958 (Repr. ed.).

Pseudobulbs up to 50 cm long, mauve-brown, leafless during flowering. Leaves alternate, membranous, sheathing at base, 5-11 x 1.2-3.0 cm, elliptic-oblong or oblong-lanceolate, acute, entire. Inflorescence in racemes from apex of pseudobulb; racemes 3-15 cm long, several-flowered. Flowers c 1.5 cm across. Capsules c 1.8 x 0.8 cm, oblong-ovoid, purple, ribbed.

*Fls. & Frts.* : September-March.

*Illus.* : Wight, Ic. t. 910. 1844-45 non Lindl. 1830 (*D. barbatulum*); Sant. & Kap. *op. cit.*

*Distrib.* : Kolhapur; Nasik; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

**D. peguanum** Lindl. In J. Proc. Linn. Soc. 3: 19. 1859; Sant. & Kap. Orch. Bombay 84, t. 18. 1966. *D. pygmaeum* Lindl. Gen. Sp. Orchid. 85. 1830 non J.E. Sm. ex Rees 1808; Hook. f. Fl. Brit. India 5: 717. 1890. *D. microbulbon* Blatt. & McC. in J. Bombay nat. Hist. Soc. 35: 262, f. 7. 1931 non A. Rich. 1845.

Pseudobulbs 1-6 cm long, ovoid-conical to oblong-ovoid, up to 2 cm in diam., usually 2-4-noded. Leaves 2-4, 2.5-5.0 x 0.6-2.0 cm, sessile, broadly elliptic or elliptic-oblong, subacute or obtuse. Racemes 1-5, arising from apex of pseudobulb, with a few scarious, sheathing bracts at base, 1-flowered, up to 7 cm long. Flowers c 1.2 cm long, shortly pedicellate, bracteate. Capsules c 0.7 x 0.5 cm, dark brown, ribbed.

*Fls. & Frts.* : October-March.

*Illus.* : Blatt. & McC. *op. cit.*; Sant. *et al.* in J. Bombay nat. Hist. Soc. 55: 484, t. 5. 1958; Sant. & Kap. *op. cit.*

*Distrib.* : Bombay; Nasik; Pune; Thane.

#### DIPLOCENTRUM Lindl.

**Diplocentrum recurvum** Lindl. in Edw. Bot. Reg. 18: sub t. 1522. 1832; Hook. f. Fl. Brit. India 6: 78. 1890; Jayaweera in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 2: 225. 1981.

Epiphytes with 5-15 cm long, stout, non-pseudobulbous, leafy stems; internodes short. Leaves 10-15 x 0.6-0.8 cm, linear, recurved, keeled, unequally and obtusely bifid at apex. Flowers pink, 0.4-0.6 cm broad, crowded towards ends of branches, in shortly peduncled, branched, long-spreading, decurved, many-flowered panicles. Fruits capsular, clavate, c 1.2 cm long.

*Fls. & Frts.* : May-July.

*Illus.* : Wight, Ic. : 1681. 1851 (*D. longifolium*); Joseph in Rec. Bot. Surv. India 22: 124, f. 105a-105b. 1982; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 719. 1982.

*Distrib.* : Scarce on trees. Pune; Sindhudurg.



## FLORA OF MAHARASHTRA STATE

4871

25

ERIA Lindl. (*nom. cons.*)

- |   |     |                       |
|---|-----|-----------------------|
| 1. Flowers solitary                                 | ... | <i>E. reticosa</i>    |
| 1. Flowers in racemes or spikes :                   |     |                       |
| 2. Inflorescence white or yellowish tomentose       | ... | <i>E. pubescens</i>   |
| 2. Inflorescence not as above :                     |     |                       |
| 3. Pseudobulbs ovoid; scapes shorter than leaves    | ... | <i>E. mysorensis</i>  |
| 3. Pseudobulbs discoid; scapes longer than leaves : |     |                       |
| 4. Plants leafless at flowering; scapes zigzag      | ... | <i>E. exilis</i>      |
| 4. Plants leafy at flowering; scapes straight :     |     |                       |
| 5. Sepals and petals with capitate glands           | ... | <i>E. dalzellii</i>   |
| 5. Sepals and petals without glands                 | ... | <i>E. microchilos</i> |

**Eria dalzellii** (Hook. ex Dalz.) Lindl. in J. Linn. Soc. 3: 47. 1859; Hook. f. Fl. Brit. India 5: 789. 1890; Cooke, Fl. Pres. Bombay 3: 193. 1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 151, t. 35. 1966. *Dendrobium dalzellii* Hook. ex Dalz. in Hook. Kew J. Bot. 4: 292. 1852.

Pseudobulbs 0.8–1.5 cm in diam., discoid, principal veins white and flabellate. Leaves 3–5, sessile, sheathing at base, 1–7 x 0.7–1.0 cm, elliptic to oblanceolate, obtuse, minutely papillose at margins. Racemes 3–9 cm long, erect, generally secund or subsecund. Flowers greenish-yellow, bracteate. Capsules c 0.5 x 0.15 cm, ellipsoid to obovoid.

*Fls. & Frts.* : July–October.

*Illus.* : Wight, Ic. t. 1642. 1851 (*Dendrobium filiforme*); Sant. & Kap. *op.cit.*

*Distrib.* : Kolhapur; Nasik; Pune; Raigad; Ratnagiri; Satara; Sindhudurg; Thane.

**E. exilis** Hook. f. Fl. Brit. India 5: 788. 1890 & in Hook. Ic. Pl. t. 2074 A. 1891; Sant. & Kap. Orch. Bombay 150. 1966. *E. minima* Blatt. & McC. In J. Bombay nat. Hist. Soc. 35: 274, f. 2. 1931.

Pseudobulbs 0.3–1.2 cm across, flat, irregularly orbicular. Leaves sessile, 2–3, arising from a pseudostem, 0.2–0.3 cm high, lamina 0.2–2.5 x 0.2–1.1 cm, obovate-elliptic or oblong to obovate, tapering to a sheathing base, rounded apiculate at apex, margins entire, minutely papillose. Scape 1–4 cm long, flexuose, capillary. Flowers up to 12 in a raceme, each c 0.32 cm long, subsessile, greenish-white. Capsules c 0.5 x 0.15 cm, broadly ovoid, green, faintly ribbed.

*Fls. & Frts.* : October–May.

*Illus.* : Blatt. & McC. *op.cit.*

*Distrib.* : Rare. Satara.

*E. microchilos* (Dalz.) Lindl. in J. Linn. Soc. 3: 47. 1858; Cooke, Fl. Pres. Bombay 3: 194. 1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 154, t. 36. 1966. *Dendrobium microchilos* Dalz. in Hook. J. Bot. Kew Gard. Misc. 3: 345. 1851. *Eria dalzellii* sensu Hook. f. Fl. Brit. India 5: 789. 1890 *p.p. non* Lindl. 1858.

Pseudobulbs 0.4–1.0 cm across, pale green, discoid. Leaves 2–5, sessile, 1.5–8.0 x 0.2–6.0 cm, oblong–lanceolate or narrowly linear–oblong, distinctly tapering towards base, apex rounded, mucronulate. Scapes 0.25–0.8 cm long. Flowers pale yellowish–white. Capsules 0.3–0.35 x 0.2 cm, ribbed, stalked.

*Fls. & Frts.* : July–October.

*Illus.* : Sant. & Kap. *op.cit.*

*Distrib.* : Kolhapur; Nasik; Pune; Raigad; Satara; Thane.

*E. mysorensis* Lindl. in J. Linn. Soc. 3: 54. 1858; Hook. f. Fl. Brit. India 5: 793. 1890; Cooke, Fl. Pres. Bombay 3: 194. 1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 149. 1966. *E. pubescens* Wight, Ic. t. 1634. 1851 *non* Lindl. 1825; Hook. f. *op.cit.*

Pseudobulbs 2–3 x 1.2 cm, sheathed. Leaves 3–5, arising from apical portion of pseudobulbs, 5–15 x 1.2–2.0 cm, oblong–lanceolate or elliptic–lanceolate, acute, distinctly tapering at base. Scapes 1–2 per plant. Flowers 1.2–1.6 cm long, white.

*Fls.* : July–October.

*Illus.* : Wight, *op.cit.*; Joseph in Rec. Bot. Surv. India 22: 112, f. 94a–94b. 1982.

*Distrib.* : Konkan (Cooke, *op.cit.*); Satara.

*E. pubescens* (Hook.) Lindl. in Edw. Bot. Reg. 11: t. 904. 1825. *Dendrobium pubescens* Hook. Exot. Fl. 2: t. 124. 1824. *Eria flava* Lindl. Gen. Sp. Orchid. 65. 1830; Hook. f. Fl. Brit. India 5: 801. 1890; S.K. Mukerjee in Bull. Bot. Surv. India 14: 97. 1972.

Rhizome stout; pseudobulbs much compressed, 7–10 cm long, ridged. Leaves up to 5, c 22 cm long, narrowly oblong. Racemes erect, stout, from base of pseudobulbs, as long as leaves, sheathed at base, flowers yellow.

*Fls. & Frts.* : April-May.

*Distrib.* : Rare. Pune.

*E. reticosa* Wight, Ic. t. 1637. 1851; Hook. f. Fl. Brit. India 5: 787. 1890; Cooke, Fl. Pres. Bombay 3: 193. 1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 146, t. 34. 1966. *E. rupestris* Blatt. & McC. in J. Bombay nat. Hist. Soc. 35: 270, f. 6. 1931.

Pseudobulbs 0.7-1.5 cm across, discoid, sheath reticulate. Leaves appearing together with flowers, 2-7 x 0.8-2.0 cm, ovate, broadly oblong or oblong-lanceolate, tapering towards base, apex acute, mucronulate, entire. Scapes arising from sides of upper sheath. Flowers white. Capsules c 1.2 x 0.8 cm, oblong to obconical, truncate at apex, erect, ridges 6.

*Fls. & Frts.* : June-March.

*Illus.* : Wight, *op.cit.*; Blatt. & McC. *op. cit.*; Sant. & Kap. *op. cit.*; Matthew, *Illus. Fl. Tamilnadu Carnatic* 2: t. 705. 1982.

*Distrib.* : Kolhapur; Pune; Satara; Sindhudurg.

*Notes* : Blatt. & McC. (*op.cit.*) distinguished *E. rupestris* from *E. reticosa* Wight on the basis of bilobed mentum and mid-lobe of lip oblong, obtuse, in the former against the entire mentum and ovate, acute mid-lobe of the lip in latter. However, in Wight (*op.cit.*) mentum of *E. reticosa* is emarginate. Therefore, after critical study, Sant. & Kap. (*op. cit.*) have merged it under *reticosa*.

EULOPHIA R. Br. ex Lindl. (*nom. cons.*)

- |  |     |                      |
|--|-----|----------------------|
| 1. Column with a distinct foot   | ... | <i>E. nuda</i>       |
| 1. Column not as above :   |     |                      |
| 2. Flowers appearing long before leaves  | ... | <i>E. dabia</i>      |
| 2. Leaves and flowers appearing simultaneously or nearly so :                    |     |                      |
| 3. Pseudobulbs very large, epigeal, green; leaves narrow; scape often branched : |     |                      |
| 4. Sepals liner-oblong, yellowish-green  | ... | <i>E. epidendrea</i> |
| 4. Sepals lanceolate, green  | ... | <i>E. graminea</i>   |
| 3. Roots tuberous, hypogeal; leaves elliptic-lanceolate; scape unbranched :      |     |                      |
| 5. Lip broader than long; side lobes large                                       | ... | <i>E. ramentacea</i> |

5. Lip longer than broad; side lobes short or absent :

6. Flowers c 1.2 cm long, deep yellow with a few brown spots; lip broadly ovate, entire ... *E. ochreatea*
6. Flowers 1.8–2.2 cm long, greenish-white, often flushed with pale mauve; lip 3-lobed ... *E. herbacea*

*Eulophia dabia* (D. Don) Hochr. in Bull. New York Bot. Gard. 6: 270. 1910; Sant. & Kap. Orch. Bombay 112. 1966. *Bletia dabia* D. Don, Prodr. Fl. Nepal. 30. 1825. *Eulophia campestris* Wall. ex Lindl. Gen. Sp. Orchid. 185. 1833; Hook. f. Fl. Brit. India 6: 4. 1890.

Pseudobulbs tuberous, oblong-orbicular, roots fleshy at junction of stem. Scapes 14–18 cm tall, erect; sheaths oblong, acute, closely appressed, 0.8–1.6 cm long. Racemes 5–11 cm long, lax, subsecund. Flowers c 1 cm long, erect. Capsules c 1.8 x 0.4 cm, oblong-obovoid, drooping.

Fls. & Frts. : January–April.

Illus. : Bose & Bhatt. Orchid. India 275. 1980 (*Eulophia campestris*).

Distrib. : Bombay; Nagpur.

*E. epidendrea* (Retz.) C.E.C. Fischer in Gamble, Fl. Pres. Madras 1434. 1928 [3: 1003. 1957 (Repr. ed.)]; Sant. & Kap. Orch. Bombay 107, t. 26. 1966. *Serapias epidendrea* Retz. Obs. Bot. 6: 65. 1791. *Eulophia virens* R. Br. in Edw. Bot. Reg. subt. 573. 1822; Hook. f. Fl. Brit. India 6: 1. 1890.

Pseudobulbs 3–11 x 2–5 cm, ovate-conical or obpyriform. Leaves alternate, distichous, sheathing at base, lamina 15–35 x 0.7–2.0 cm, linear or linear-lanceolate, apex acute or subacuminate, entire, subcarinate at base. Inflorescence up to 60 cm long, laxly many-flowered. Flowers pale greenish, tinged with maroon c 2.2 x 2.8 cm. Capsules c 4.5 x 1.1 cm, oblong, drooping, pale mauve with 3 pale green, broad bands.

Fls. & Frts. : November–March.

Illus. : Wight, Ic. t. 913. 184–1845 (*Eulophia virens*); Sant. & Kap. op.cit.; Jayaweera in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 2: 169, f. 76. 1981; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 722. 1982.

Distrib. : Rare. Sindhudurg.

*E. graminea* Lindl. Gen. Sp. Orchid. 182. 1833; Hook. f. Fl. Brit. India 6: 2. 1890; Bachulkar & Yadav in J. Econ. Tax. Bot. 17: 329. 1993.

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Pseudobulbs 5-10 x 5-9 cm, conical, pyriform to almost spherical, green, marked with transverse lines of leaf bases. Leaves linear with sheathing leaf bases, lower reduced to sheaths, upper 7-27 x 1.5-2.5 cm. Scapes lateral, 1-2 per pseudobulb, 50-90 x 0.5-0.7 cm. Flowers in racemes. Capsules 2.0-2.5 x 0.7-0.8 cm, ellipsoid-oblong, drooping, yellowish-green.

*Fls. & Frts.* : July-September

*Illus.* : Jayaweera in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 2: 172, f. 77. 1981.

*Distrib.* : It grows in sugarcane fields among clumps of sugarcane around Sangli (Bachulkar & Yadav, *op. cit.*).

*E. herbacea* Lindl. Gen. Sp. Orchid. 182. 1833; Hook. f. Fl. Brit. India 6: 2. 1890; Cooke, Fl. Pres. Bombay 3: 196. 1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 111. 1966.

Pseudobulbs tuberous, 2-3 cm in diam., ovoid to broadly conical, markings transverse, circular. Leaves 10-30 x 3-9 cm, usually 2-5 per plant, elliptic-lanceolate to broadly elliptic, acute or subacuminate, entire, many-nerved. Inflorescence 30-60 cm long, erect, arising in axil of a basal sheath from pseudostem. Flowers in lax racemes.

*Fls.* : July.

*Distrib.* : Bombay; Thane.

*E. nuda* Lindl. Gen. Sp. Orchid. 180. 1833; Hook. f. Fl. Brit. India 6: 5. 1890; Cooke, Fl. Pres. Bombay 3: 197. 1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 115. 1966. 'Ambarkand'.

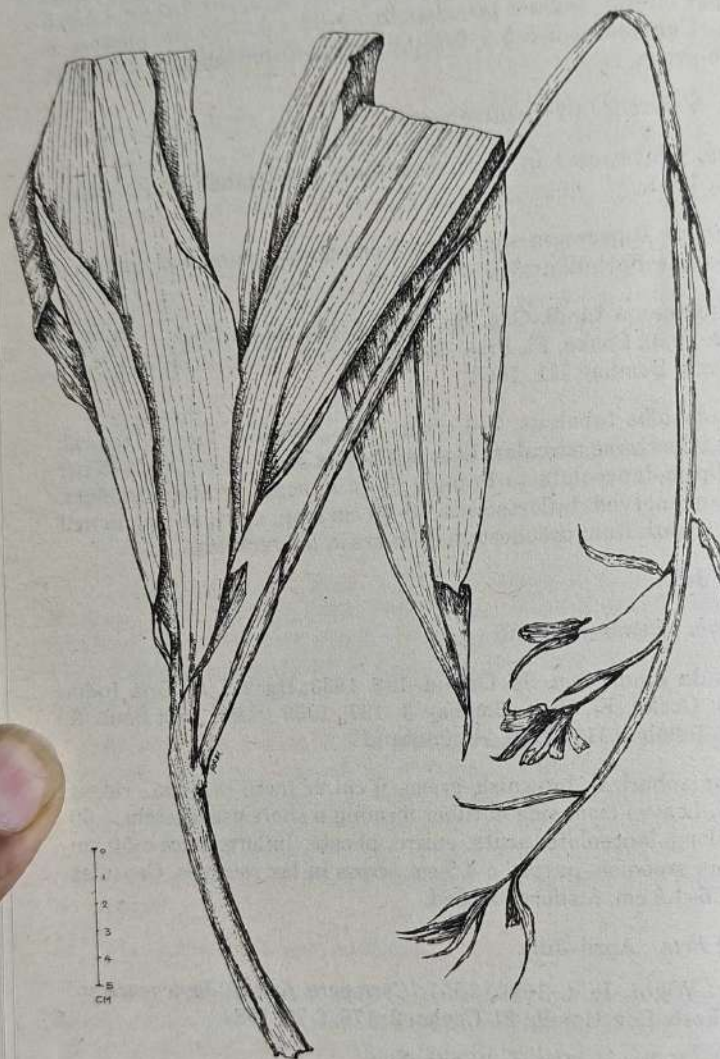
Tubers spherical, brownish-green, 6 cm or more in diam., ridges transverse. Leaves from side of tuber forming a short pseudostem, c 60 x 6 cm, oblong-lanceolate, acute, entire, plicate. Inflorescence c 50 cm tall. Flowers greenish-purple, c 4.5 cm across in lax racemes. Capsules 5.0-5.5 x 1.5-1.8 cm, fusiform, ribbed.

*Fls. & Frts.* : April-July.

*Illus.* : Wight, Ic. t. 1690. 1851 (*Cyrtopera fusca*); Jayaweera in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 2: 176, f. 79. 1981.

*Distrib.* : Kolhapur; Satara; Sindhudurg.

*E. ochreatea* Lindl. in J. Linn. Soc. 3: 24. 1858; Hook. f. Fl. Brit. India 6: 2. 1890; Cooke, Fl. Pres. Bombay 3: 196. 1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 109, t. 27. 1966.

*Eulophia herbsacea* Lindl.

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Pseudobulbs c 4.0 x 2.5 cm, ovoid-conical, markings irregular, transverse and longitudinal. Leaves 2-5, arising from base of pseudobulb, 13-28 x 4-10 cm, sheathing at base, oblong-lanceolate, lanceolate to ovate or ovate-elliptic, acute, entire. Scapes appearing with leaves from pseudostem, 25-45 cm long. Flowers in dense racemes, clustered at top of scape, c 1.5 cm across. Capsules c 2.8 x 1.2 cm, broadly ovoid, deflexed, strongly ridged, green.

*Fls. & Frts.* : June-October.

*Illus.* : Sant. & Kap. *op. cit.*

*Distrib.* : Amaravati; Bombay; Chandrapur; Kolhapur; Pune; Thane.

**E. ramentacea** Lindl. ex Wight, Ic. t. 1666. 1852; Sant. & Kap. Orch. Bombay 113, t. 28. 1966. *E. pratensis* Lindl. in J. Linn. Soc. 3: 25. 1858; Hook. f. Fl. Brit. India 6: 5. 1890; Cooke, Fl. Pres. Bombay 3: 197. 1958 (Repr.ed.). '*Satauri*'.

Pseudobulbs shortly pyramidal or irregularly 3-cornered. Leaves 2-4, appearing before flowers, 11-30 x 1-2 cm, narrowly oblong-lanceolate, acute. Scape 17-48 cm long, erect, from top or side of pseudobulb, 1-2-noded. Flowers pale maroon suffused with yellow, c 2.5 x 3.0 cm, in lax racemes. Capsules c 3.0 x 1.7 cm, drooping, obovoid-oblong, greenish-purple, bands 3, strong and longitudinal.

*Fls. & Frts.* : December-March.

*Illus.* : Sant & Kap. *op. cit.*

*Distrib.* : Kolhapur; Osmanabad; Pune; Raigad; Satara.

#### FLICKINGERIA Hawkes

**Flickingeria macraei** (Lindl.) Seid. in Dansk. Bot. Ark. 34: 39. 1980. *Dendrobium macraei* Lindl. Gen. Sp. Orchid. 75. 1830; Hook. f. Fl. Brit. India 5: 714. 1890 p.p.; Cooke, Fl. Pres. Bombay 3: 182. 1958 (Repr.ed.); Sant. & Kap. Orch. Bombay 79, t. 16. 1966. '*Joivansi*'.

Stems long, creeping, annulate, profusely branched. Pseudobulbs 2-8 x 0.5-2.0 cm, linear-oblong, fusiform, green or yellow. Leaves 4-10 x 1.0-2.5 cm, sessile, ovate-lanceolate or oblong-elliptic, acute, obtuse or rarely subretuse. Flowers white with a pinkish tinge, obtuse or rarely subretuse. Flowers white with a pinkish tinge, axillary. Capsules 3.5-5.0 cm long, oblong, yellow, ridged.

*Fls. & Frts.* : July–October.

*Illus.* : Sant. & Kap. *op.cit.*; Joseph in Rec. Bot. Surv. India 22: 89, f. 73a–73c. 1982 [*Ephemerantha macraei* (Lindl.) P.F. Hunt & Summerh. in Taxon 10: 105. 1961].

*Distrib.* : Pune; Satara; Sindhudurg.

#### GASTROCHILUS D. Don

*Gastrochilus calceolaris* (Buch.–Ham. ex J. E. Sm.) D. Don, Prodr. Fl. Nepal. 32. 1825; Joseph, Orch. Nilgiris 123, t. 103 a – d. 1982; S. M. Almeida, Fl. Savantwadi 2: 11. 1990. *Aerides calceolare* Buch.–Ham. ex J. E. Sm. in Hook. f. Fl. Brit. India 6: 60. 1890. (*Gastrochilus dasypogon* (auct. non Rees) O. Ktze. 1891; Sant. & Kap. Orch. Bombay 26. 1966

Epiphytes. Leaves unequally lobed at apex. Inflorescence of axillary racemes. Sepals and petals greenish-white; mid lobe of lip raised yellow.

*Fls.* : April–June.

*Illus.* : Wight, Ic. t. 1671. 1851 (*Vanda pulchella*); Joseph, *op. cit.*

*Distrib.* : Rare. Sindhudurg (S. M. Almeida, *op. cit.*).

#### GEODORUM G. Jackson

*Geodorum densiflorum* (Lam.) Schltr. in Feddes Repert. 4: 259. 1929; Sant & Kap. Orch. Bombay 203, t. 50. 1966. *Limodorum densiflorum* Lam. Encycl. 3. 516. 1791–92. *Geodorum dilatatum sensu* Hook. f. Fl. Brit. India 6: 17. 1890 non R. Br. 1813; Cooke, Fl. Pres. Bombay 3: 198. 1958 (Repr. ed.). *G. purpureum* R. Br. in Ait. Hort. Kew. ed. 2, 5: 207. 1813; Hook. f. *op.cit.* 16. 'Haryakand'.

Pseudobulbs c 5 x 3 cm, tuberous, ovoid-conical, greenish-brown, bands transverse, circular. Leaves 1 or 2, forming a pseudostem, 11–40 x 5–10 cm, sheathing at base, subplicate, obovate-oblong, elliptic or elliptic-lanceolate, acute, entire, the upper ones tapering into a long narrow petiole. Scape 28–32 cm tall. Inflorescence c 4 cm long, a compact subcorymbose raceme, facing downwards. Flowers c 1.5 cm long, pinkish-white or white, bracteate, shortly pedicellate. Capsules 3.5–4.0 x 1.0–1.5 cm. ellipsoid, conspicuously 6-ribbed.

*Fls. & Frts.* : June–November.

*Illus.* : Sant & Kap. *op.cit.*; Jayaweera in Dassan. & Fosb. Rev.

Handb. Fl. Ceylon 2: 181, f. 81. 1981; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t.723. 1983.

*Distrib.* : Amaravati; Nasik; Sindhudurg.

## HABENARIA Willd.

1. Petals truncate 2 – fid or 2 partite :
  2. Sepals with filiform tips ... *H. stenopetala*
  2. Sepals not as above :
    3. Leaves clustered at the middle of stem ... *H. multicaudata*
    3. Stem leafy upwards or at or near base :
      4. Stem leafy upwards :
        5. Segments of petals subequal or lower slightly shorter; spur distinctly clavate at apex ... *H. foliosa*
        5. Lower segment of petals less than (or rarely up to) half as long as upper ones; spur scarcely clavate ... *H. digitata*
      4. Stem leafy at or near base only :
        6. Leaves thin; anthers rounded at tip ... *H. rariflora*
        6. Leaves fleshy, coriaceous; anthers distinctly tricuspidate at tip ... *H. grandifloriformis*
1. Petals entire :
  7. Sidelobes of petals broad :
    8. Lip not or hardly longer than lateral sepals ... *H. suaveolens*
    8. Lip much longer than lateral sepals :
      9. Petals narrowly linear; lateral lobes of lip with long filiform tails, midlobe 2 – lobulate with a minute mucro between filiform tailed lobules ... *H. crinifera*
      9. Petals linear-oblong, spatulate or broadly ovate or ovate-oblong; lobes of lip not tailed :
        10. Spur shorter than or equalling ovary ... *H. panchganiensis*
        10. Spur  $1\frac{1}{2}$  – 3 times longer than ovary :
          11. Leaves radical, spreading on ground; ovary sessile or subsessile; lip 0.7–1.2 cm long; stigmatic processes somewhat oblong, white ... *H. plantaginea*
          11. Leaves grouped at base of stem; ovary on long pedicel; lip 1.4–2.9 cm long; stigmatic processes clavate, green ... *H. longicorniculata*

7. Sidelobes of petals very narrow
12. Tubes of anther cells long :  
 13. Leaves flat on ground ... *H. roxburghii*  
 13. Leaves not as above ... *H. commelinifolia*
12. Tubes of anther cells short :  
 14. Leaves flat on ground :  
 15. Petals narrow, linear-oblong; segments of lip filiform; the lateral ones much longer than the midlobe ... *H. diphylla*  
 15. Petals ovate or ovate-oblong; segments of lip linear-oblong, subequal ... *H. crassifolia*
14. Leaves not as above :  
 16. Stem leafy upwards ... *H. heyneana*  
 16. Leaves clustered towards middle or base of stem :  
 17. Leaves clustered at base of stem :  
 18. Floral bracts equal to or longer than ovary ... *H. marginata*  
 18. Floral bracts up to half as long as ovary ... *H. viridiflora*
17. Leaves clustered at middle of stem :  
 19. Spur straight ... *H. ovalifolia*  
 19. Spur incurved :  
 20. Floral bracts and spur longer than ovary ... *H. furcifera*  
 20. Floral bracts and spur shorter than ovary ... *H. hollandiana*

**Habenaria commelinifolia** (Roxb.) Wall. ex Lindl. Gen. Sp. Orchid. 325. 1835; Hook. f. Fl. Brit. India 6: 143. 1890; Cooke, Fl. Pres. Bombay 3: 224. 1958 (Repr. ed.); Sant. & Kap. Orch. Bombay 25, t. 4, f. 11-12. 1966. *Orchis commelinifolia* Roxb. Fl. Ind. 3: 415. 1832.

Herbs, 42-78 cm tall. Tubers 1-2, 4-7 x 1-2 cm, ellipsoid. Leaves alternately distichous, 6-20 x 1.5-3.5 cm, oblong or oblong-lanceolate, acute or rarely subspinescent, entire, minutely papillate. Peduncle 15-35 cm long, bracteate. Spikes 7-20 cm long, somewhat dense. Flowers greenish-white, sessile, bracteate. Capsules fusiform.

*Fls. & Frts.* : August-November.

*Illus.* : Sant. & Kap. *op.cit.*

*Distrib.* : Amaravati; Bhandara; Bombay; Chandrapur; Kolhapur; Pune; Raigad; Sindhudurg; Thane.

#### *H. crass*

Hook. f. Fl. Br.  
1958 (Repr. ed.)

Herbs, 18  
elliptic or broad  
uppermost diff  
2-10 cm, broad  
acute or acum  
Flowers c 0.7 x  
1.5 x 0.4 cm, ell

*Fls. & Frts.*

*Illus.* : Wig  
Gen. Sp. Orch. 2  
1915 (Repr. ed. 1

*Distrib.* : Al

#### *H. crinifer*

India 6:142. 189  
Sant. & Kap. O  
Dassan. & Fosb. J

Tuber 1, ob  
developing into  
oblong-elliptic o  
Scape 7-12 cm lo  
bracteate, white;  
1.5-2.5 cm long.

*Fls. & Frts.* :

*Illus.* : Wight  
Dassan. & Fosb. *op*

*Distrib.* : Rat

#### *H. digitata* L

India 6: 134. 1890  
Sant. & Kap. Orch.

Herbs, 18-60  
pentastichous, 2-1  
elliptic-lanceolate,  
cm long, of few to n